The Newspaper of Information Systems Management
April 17, 1995, Vol. 29, No. 16, 152 Pages, $6/Copy, $48/Year

COMPUTERWORLD

Important Message

To: Windows developers
Date: 4/17
Re: Gerstner's OS/2 push

☑ Urgent ☐ In person
☐ Call ☐ Will call again

Message:

IBM still hasn't called

IBM drags feet on OS/2 pitch

By Lisa Picarille

IBM's effort to woo Windows developers over to OS/2 is moving at less than warp speed.

Software developers are finding it difficult to judge IBM's commitment to rounding up OS/2 independent software vendors. The company has already failed to meet Chief Executive Officer Louis V. Gerstner's recent mandate to contact "within one week, the world's top 1,000 software developers."

More than two weeks ago, Gerstner circulated a letter to 100 of IBM's top-level executives, ordering each to telephone 10 software developers from a provided list. The IBM executives, including Gerstner, were to explain to devel-

OS/2, *page 12*

Novell users trip over NDS

By Laura DiDio

NetWare Directory Services may stand out as the biggest technical plus in Novell, Inc.'s NetWare 4.1, but it is also the most problematic portion of the network operating system for users without proper training.

Scores of users are installing NDS themselves and are suffering the consequences.

In the past month, more than 1,000 users have posted questions on CompuServe's Novell NetWire forum asking how to recover from myriad NDS technical glitches. Most of those problems were their own fault, according to fellow network administrators.

NDS is an object-based directory that provides administrators with a single log-on and a view of the entire enterprise. It stores network information about every network resource such as users, groups, printers and volumes in a distributed database.

Still, savvy users who did their homework

Novell, *page 16*

OLE to expand

Microsoft readies blueprint for object software

By Elizabeth Heichler

In a move that users and analysts labeled long overdue, Microsoft Corp. is preparing for an early May unveiling of its long-term plan to extend key software technologies such as OLE from the desktop to the enterprise.

Thus far, corporate America has found the details of Microsoft's enterprise strategy elusive and the difficulties of working with its object-based software technology daunting.

Microsoft's OLE 2.0 technology, used primarily by developers, allows desktop applications to be launched from within other applications. It also provides a common interface that allows applications to be assembled from pre-existing software building blocks called OLE controls, or OCXs.

"What we'll settle for from Microsoft is the truth," said Joe Iwanski, a senior technical adviser at Mobil Corp.'s planning and technology unit in Fairfax, Va. Even Mobil's best technical people have been unable to understand what Microsoft's future strategy for OLE is and how Mobil is going to use it, he said.

"But whatever Microsoft gives us, we're going to have to live with," Iwanski added, echoing the attitude of other users who feel they must follow Microsoft's

Microsoft, *page 16*

Taking OLE to the enterprise

Highlights of Microsoft's OLE strategy will include:

- How OLE will be extended to transaction processing and database services
- How its repository – due out in late 1996 – will be used to manage development of software components
- How its operating systems will support distributed enterprise computing

Mobile market moving up

By Michael Fitzgerald

After 18 months of dysfunction, disarray and disillusionment, the mobile market is heading in a direction that users applaud.

The global perspective on a series of seemingly unrelated events indicates that the mobile market is moving rapidly toward providing a much more usable applications and management environment by the end of the year.

If the events develop as expected, leading-edge users can start planning now for potential project deployments in the fourth quarter.

Among the activities predicted to push the industry forward are the following:

- Xcellenet, Inc. has announced internally that it will develop a Windows NT version of RemoteWare. Over time, Xcellenet will in-

Mobile, *page 133*

SYSTEMS in the SLAMMER

IS faces unusual challenges behind bars

By Alice LaPlante

Were Hollywood to update the classic *To Kill A Mockingbird*, Southern lawyer Tom Hanks would walk into a prison managed by Wackenhut Corrections Corp. and be asked to take a quick mug shot and give his name, driver's license number and other personal information.

Immediately, his photo would be digitized and stored in an image database while a bar-coded wristband — just like the ones inmates wear — would be generated and slapped around his wrist.

Welcome to the "big house" of the 1990s, where technology is fast becoming an essential part of the big picture. Identification, security and control are

Management, *page 89*

Not settling

Pitiless shareholders, who saw Sybase stock prices plunge 40% as word of the company's misfortune spread, have hit Sybase with at least four lawsuits.

Slow sales pull Sybase down

By Kim S. Nash

Sybase, Inc. last week blamed slack sales of its core System 10 database for yanking down the firm's historically high revenue growth. The Emeryville, Calif.-based company posted its first quarterly loss since going public in 1991.

The $17.4 million shortfall, which included a one-time $25 million charge related to the purchase of Powersoft Corp. in February, did not upset users and analysts as much as the unexpected drop in sales of Sybase's flagship database (see chart, page 133).

"Maybe we were a little overconfident," said Mark Hoffman, Sybase's president, chairman and chief executive officer. "We were thinking that we have issues but will achieve our expectations."

Those "issues" include the painful realization that potential customers have shunned System 10 in recent months and are waiting for improved multiprocessing capabilities promised for later this year, Hoffman acknowledged.

Sybase, *page 133*

Newspaper
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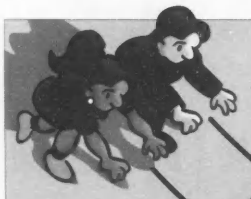
What's Inside

April 17, 1995



In Depth this week

CYBERLAND

Business use of the Internet isn't a game. Or is it? On page 102, we bring you Cyberland — The Game. Navigate through webs and gophers and land on key on-line services that can make you a business winner.

■**EMC** customers may be in for some sticker shock after the company ships a promised RAID offering next month. **NEWS,** *page 4*

■**SAP** users want the software vendor to focus on the basics. **NEWS,** *page 4*

■**Chipcom** unveils a road map designed to help LAN users migrate to high-speed virtual, switched and ATM networks. **NEWS,** *page 6*

■Digital releases its **TurboLaser** server running Oracle7 software. **NEWS,** *page 10*

■**Wang and Microsoft** end their court battle with Microsoft investing in Wang and agreeing to use Wang imaging technology. **NEWS,** *page 14*

■Attendees at the AIIM show look for complete **imaging solutions**. **NEWS,** *page 12*

■**AMD** says its K5 chip will be be delayed by a few months. **NEWS,** *page 133*

■Caldera, funded by **Ray Noorda**, develops commercial applications based on the free Unix clone Linux. **COMPUTER INDUSTRY,** *page 32*

Closer Look AS/400

■**A Closer Look at the IBM AS/400's** new operating system shows a lot of user interest but not a high adoption rate. **LARGE SYSTEMS,** *page 71*

■Users looking to **electronically distribute documents** now have more solutions than ever. **DESKTOP COMPUTING,** *page 41*

■Beta testers of an **upgraded LAN audit tool** rely on its access-monitoring features. **WORKGROUP COMPUTING,** *page 53*

■The Environmental Protection Agency is integrating its **E-mail systems** into one user mailbox. **ENTERPRISE NETWORKING,** *page 63*

How do you measure up?

How does your IS department compare with the Computerworld Premier 100? Fill out the Premier 100 survey, and we'll send you a free report showing how your operation compares with Premier 100 averages. Consolidated information from the surveys we collect may be published in a future Premier 100 issue. Send a request on company letterhead to Paul Gillin, Editor, Computerworld, 375 Cochituate Road, Framingham, Mass. 01701 or E-mail to survey@cw.com.

IT'S A RAID!

Recruiters on the hunt for top-notch skills hit savvy IS shops first, often targeting well-respected project team leaders.

SEE CAREERS, PAGE 106

■Database users must sort through a confusing bunch of choices for **getting different databases talking to each other**. **APPLICATION DEVELOPMENT,** *page 81*

■**Companies this year expect to increase spending by 10% or more** on PCs, minis, LAN internetworking, laptops and LAN hardware. **MARKETPLACE,** *page 121*

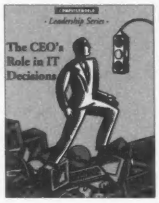
■**Bill Laberis** says the chaos of client/server may make one long for the predictability of the mainframe world. **VIEWPOINT,** *page 36*

■**Frederic Withington** predicts that time will make Microsoft's legal problems fade away. **VIEWPOINT,** *page 37*

■**Patricia Seybold** warns that corporations will regret not going on-line with their customers. **VIEWPOINT,** *page 37*

■**Charles Babcock** says the server market will benefit from special features in Intel's planned P6 microprocessor. **COMMENTARY,** *page 134*

SPECIAL REPORT



CEOs can be a meddlesome lot, especially when it comes to corporate IT investments. To avoid mistakes, senior executives must resist the urge to manipulate or dictate the choice of technological solutions. In this month's Leadership Series report, Bill Carico discusses how IS and general management should work together when making IT decisions. *Leadership Series, following page 56.*

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Executive Briefing

Corporate developers are frustrated trying to understand Microsoft's enterprise computing strategy. Now Microsoft is preparing to divulge more details about its plans to extend key technologies such as OLE from the desktop to the enterprise. *Page 1*

Mobile computing may be ready to pick up speed. Leading-edge users can start planning now for new project deployment by the end of this year. Progress in areas such as management of remote access should make life easier for managers embarking on mobile computing strategies. *Page 1*

Microsoft's move to put Windows 95 on Windows NT signals the eventual merger of the two systems into a single code base, and that means Microsoft will phase out the current desktop Windows architecture in favor of NT. *Page 6*

Information technology is doing hard time. Wrist bands that track your every movement. Eye and hand scanners that record where you go. America's expanding **prisons are using these unusual technologies** to help keep inmates under lock and key. *Page 1*

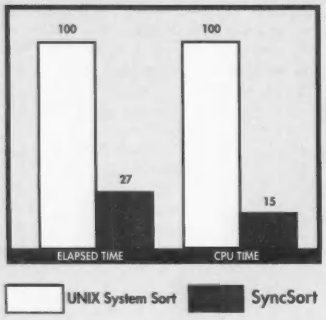
Electronic commerce made progress last week. Seeking to avert a standards war **over Internet security schemes**, Terisa Systems said it will incorporate two transaction security standards into a commercial tool kit, and the CommerceNet consortium plans a user authentication pilot for its 100 members. *Page 14.* Meanwhile, Spring Internet World '95, held last week, focuses on **tools and techniques for bringing commerce to the 'net.** *Page 66*

On site this week: This map's for you: The **City of Milwaukee** and IS director Holly Loveland, left, put municipal mapping onto each user desktop. *Page 53.* In Seattle, getting to the airport via the Seattle Shuttle takes a **client/server shortcut.** *Page 44.* As the U.S. Naval Sea Systems Command sails into client/server seas, it is **tossing 26 mainframes overboard.** *Page 73*

The 5th Wave *by* Rich Tennant

"OK - TECHNICALLY, THIS SHOULD WORK, JUDY, TYPE THE WORD 'GOODYEAR,' ALL CAPS, BOLD FACE, AT 700 POINT TYPE SIZE."

PERFORMANCE



FUNCTIONS

	UNIX System Sort	SyncSort
RECORD FORMATS		
Fixed length binary	NO	**YES**
Variable length binary	NO	**YES**
ASCII Text	YES	**YES**
RECORD PROCESSING		
Selection	NO	**YES**
Reformatting	NO	**YES**
Summarization	NO	**YES**
Grouping	NO	**YES**
COLLATING SEQUENCES		
Standard ASCII	YES	**YES**
EBCDIC	NO	**YES**
User Defined	NO	**YES**
Multi-byte	NO	**YES**

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The UNIX System Sort

XINU

Discount days to end for EMC customers

By Craig Stedman

EMC Corp. customers accustomed to buying fully mirrored versions of its mainframe disk arrays at RAID-like prices may face some sticker shock when the company starts shipping its own RAID offering next month.

EMC, which is bidding to overtake IBM as the leader in mainframe disk shipments (see chart), has been discounting mirrored versions of its Symmetrix arrays to compete with RAID Level 5 or above products that IBM and Storage Technology Corp. shipped last year.

But after unveiling its promised RAID-S technology today, EMC will try to return to a higher per-megabyte price for mirrored Symmetrix configurations, which provide more direct data redundancy than RAID Level 5 approaches [CW, Jan. 30].

User outcry

However, EMC's plan prompted immediate complaints from Symmetrix users who said they will try to keep the mirroring prices just the way they are during negotiations.

"There's no question that we would not be prepared to pay a significant increase" above the current cost of mirrored Symmetrix arrays, said Mike Maggs, vice president of technology at Bell Sygma, Inc., the information systems and outsourcing arm of Bell Canada, Inc. in Toronto.

Bell Sygma, which has 5T bytes of EMC storage in place, prefers mirroring to RAID for data protection, Maggs added. "Mirroring is a more reliable way of doing it, and RAID will definitely slow down your box" because files have to be rebuilt when disk drives fail, he said. With mirroring, work is simply switched to a fully loaded backup drive.

Referred to as RAID Level 1, mirroring typically costs more than higher-level RAID approaches because it requires 50% more disk drives to get the same usable capacity, analysts noted. Mirroring pairs a data drive with its own backup disk, while RAID-S and IBM's Ramac group three data disks with a single backup.

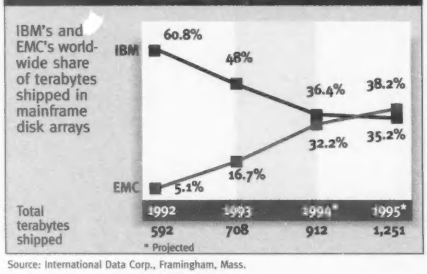
However, EMC had to aggressively price mirroring to compete with IBM and StorageTek, said Robert Callery, an analyst at International Data Corp. in Framingham, Mass. Now that buyers have had a taste of the cheaper pricing, getting them to pay more for mirroring "is going to be real hard" even with RAID-S on the menu, Callery added.

EMC may get first-time buyers to swallow higher mirroring costs but trying that on its installed base "would just be incredibly bad marketing," said Al Pomerantz, vice president of technical services at General Accident Insurance of America in Philadelphia. "It wouldn't make us a happy customer," said Pomerantz, who just bought a mirrored Symmetrix 5500-9 array.

While Symmetrix users can mix mirroring and RAID-S in a single array, initial bid prices will be based on the full capacity being configured for RAID-S, said Richard Blaschke, vice president of mainframe marketing at EMC in Hopkinton, Mass. That would mean customers who mirror some or all of their drives would pay more per megabyte.

However, in haggling over the actual price, EMC will likely offer "some incentives to push mirroring" as long as customers agree to keep their disks mirrored and not switch to RAID-S to get more capacity, Blaschke added.

Collision course



Source: International Data Corp., Framingham, Mass.

Setting sail

RAID-S, a hybrid of RAID Level 4 and 5 technology, will ship during May in a new Symmetrix 5100 low-end array targeted at small mainframe shops, EMC said. By late June or early July, it should be available across all of EMC's arrays that use 9G-byte and 4G-byte drives. With RAID-S, EMC will now be able to support multiple RAID levels, data formats and disk drive capacities in a single Symmetrix box. That kind of flexibility "is a real strong arrow in their quiver," said Rob Schafer, an analyst at Meta Group, Inc. "But we still need to see how [RAID-S] actually performs."

Users anxious for SAP R/3 tweaks

More functionality, features essential for client/server application suite

By Rosemary Cafasso

While SAP AG talks up the glitzy middleware technology slated to ship with Release 3.0 of R/3, some users said they are more concerned with the nuts-and-bolts improvements they need to move forward with the client/server applications suite.

Users interviewed last week said there are several basic functions — many of which focus on contract management — that SAP promised for Release 3 that are vital to their operations. These functions will ship along with workflow technology, automated functions for software installation and boosts to the manufacturing modules, with particular emphasis on process manufacturing functions, according to Carl McInroy, SAP's U.S. rollout manager for Release 3.

R/3 is an integrated set of client/server applications that includes financial, human resources and manufacturing programs. It is supposed to ship to beta customers late next month, with general availability planned for later this year, SAP officials said last week.

McInroy confirmed that the company is still on schedule to deliver "additional functionality for contract and services processing" with Release 3. He said nearly every module in R/3 is being tweaked somewhat.

That is good news for Chevron Corp., which plans a worldwide implementation of R/3. A spokesman said that if the product does not provide the capabilities Chevron needs to better create and manage national contracts, its deployment schedule will be delayed.

On hold

One large Chevron products unit is slated to receive R/3 next year, but the company cannot move forward with this plan unless the release has contract management capabilities, said Bob Washa, a technical manager in corporate information systems at Chevron in San Ramon, Calif.

Washa said Chevron needs to create master accounts in R/3 that different groups of users could share. This would establish set rules for the purchase of products and services for a particular contract.

"This is not there now, and it's vital for a company like us," Washa said.

Pacific Gas & Electric Co. is also waiting for some basic functional improvements across most of the R/3 modules.

"We've found Version 2.2 to be very [feature] rich, [but] we clearly need 3.0 and its improvements to make it fully functional for PG&E," said Tom Long, controller at PG&E in San Francisco, which signed a multimillion-dollar R/3 contract last year.

Analysts have called Release 3 the most substantial R/3 upgrade yet. Beyond the core functions users are demanding, the manufacturing software improvements are essential, said Erik Keller, an analyst at Gartner Group, Inc. in Stamford, Conn.

"The manufacturing stuff is really important," Keller said. "A lot of people are using only portions of it now because it doesn't meet all their needs."

Further enhancements

Bruce Richardson, an analyst at Advanced Manufacturing Research, Inc. in Boston, said the workflow, improved installation procedures and middleware technology, dubbed Application Link Enabling (ALE), will also boost the applications suite.

Several users said R/3's ALE will be helpful in the longer term as they set out to distribute R/3 modules or link it with other vendor's applications. SAP has been talking up ALE for months, beginning at its Sapphire user conference last year. It also released an explainer on ALE last month.

Power to the people

PeopleSoft Corp. is expected to spell out its manufacturing applications strategy next month. The products planned for next year would turn its current client/server software offerings into more of a full-blown suite and make the company more competitive with market giant SAP AG. PeopleSoft now sells several human resources and financial modules and a distribution application.

User requirements for SAP's R/3 Release 3.0:

- A progressive billing feature for staggering payments
- A feature to record a service as a service instead of as a product
- The ability to create and maintain national contracts
- The ability to create master contracts to be used by multiple sites
- Improved installation procedures
- Better documentation

Source: User interviews

Platinum Software has initial success with new high-end financial software. See page 73.

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Microsoft moving to single operating system

Change should reduce costs for customers and developers

By Stuart J. Johnston

When Microsoft Corp. quietly announced last month that it would add the Windows 95 user interface to Windows NT after the release of Windows 95, the move meant more than simply providing both operating systems with the same interface.

The plan signals the merger of the two systems into a single code base, which means Microsoft will phase out the current architecture of desktop Windows in favor of NT, a company official confirmed last week. Eventually, users will run NT on both the desktop and server.

For users and developers, the move could mean significant cost savings because they will have to only write or buy one version of a productivity application, and it will run on either operating system. Microsoft, of course, would benefit by having to upgrade only a single operating system rather than two.

Pleasing everyone

With "one environment for developers and the users, everybody's happy," said Gerald Michaud, a programmer and systems manager at a large industrial firm in East Hartford, Conn.

Currently, NT sports the same user interface as desktop Windows 3.1. But Windows 95 will have a different interface, which many users say is much more intuitive. Users began demanding that Microsoft put the Windows 95 interface on NT soon after Windows 95 entered beta testing last summer [CW, Nov. 21, 1994].

Merging the code bases could occur as soon as 18 to 24 months from now, or it could take as long as five years, said Collins Hemingway, Microsoft's director of industry marketing.

As a prepatory step, Microsoft has been insisting that applications run under both Windows 95 and NT before they can sport the Windows 95 "compatible" logo — the Microsoft equivalent of the Good Housekeeping Seal.

"Microsoft is going to reposition NT as Windows [for desktop users] in the 1997-98 time frame. [For that to work,] you need the same interface that users have for desktop Windows, and you need all the same applications," said Michael Kwatinetz, an analyst at PaineWebber, Inc. in New York.

However, writing a Windows 95 application does not guarantee that the same program will run correctly under Windows NT because in some areas, the two platforms' programming interfaces are different. Hence the reason for the tougher logo requirements.

Eventually, Microsoft will discontinue current desktop versions of Windows — including the hybrid 16/32-bit operating system that Windows 95 will be — and replace them with a fully 32-bit NT product with a merged code base.

Soon after Windows 95 ships in August, Microsoft plans to begin beta-testing the interface for NT, said Rich Tong, Microsoft's general manager for corporate and network systems.

Kwatinetz predicted that users will shift to NT on the desktop when the features of PCs that cost under $2,000 match NT's requirements — a fast 486, Pentium or supported RISC chip with at least 12M to 16M bytes of RAM.

"Windows 95 is very much a transitional product, and [Microsoft is] waiting for machine capabilities to catch up [because] it's going to be a no-brainer in a couple of years to run NT on the desktop," said Colin Carpi, president of Chartwell Advisory Services, Inc. in Penn Valley, Pa., which is building a public personal financial services network.

"I think that putting the Windows 95 interface on NT will help to accelerate the move to NT," said Paul Grayson, chairman and chief executive officer of Micrografx Corp. The Richardson, Texas company's products are being tested for compatibility with both NT and Windows 95.

"The speculation that Windows 95 isn't as robust as it could be might also drive a lot of corporate users to NT instead, which might play right into Microsoft's strategy," Grayson said.

Senior writer Lisa Picarille contributed to this report.

Window with a view

The advantages of running Windows 95 instead of Windows 3.1

Windows 95	Windows 3.1	Advantage
Start button and task bar	Program manager	Hierarchical menus give users quick access to all programs. Running programs appear on the task bar.
The Explorer	File manager	Uses folder metaphor to let users access files and browse network drives.
Right mouse button	No right button	The right mouse button now does what pull-down menus used to do.

Chipcom blueprint may ease move to ATM net

By Laura DiDio

Chipcom Corp. last week became the latest vendor to unveil a blueprint for migrating customers from today's shared LANs to high-speed Asynchronous Transfer Mode (ATM) switched networks during the next 18 months.

ATM is a high-speed, cell-based technology designed to overcome the limitations of today's packet-based LAN networks by transmitting multimedia voice, video and data traffic across high-speed, fiber-optic networks. ATM differs from shared LANs in that it does not store and forward data or contend for bandwidth. It simply switches high-volume traffic from one network device to another based on a cell address.

The 155M bit/sec. ATM networks will be necessary for users to accommodate the increasingly bandwidth-intensive and multimedia applications of the future.

Chipcom in Southboro, Mass., will deliver the first products in its three-phased Chipcom Cornerstone Networking Architecture (CCNA) this summer, said Frank Hiatt, the company's director of ATM products.

CCNA components will include a wide range of options for the company's Oncore switching hub, such as ATM adapters and switch modules, stand-alone ATM concentrators and network management offerings for its Ondemand platform.

Users such as Ron Puccinelli, an analyst at Bayer Corp. in Berkeley, Calif., responded positively to the announcement, saying the company delivered a "more clearly articulated strategy" than some of its rivals.

"Whatever I buy in the next several months will work with the Online and Oncore hubs I have now as well [with] any devices I purchase a year from now," Puccinelli said. "That's impressive."

Management made easy

Chipcom will ship "logical management for legacy and switched LANs as well as full backward compatibility among the various hub products," Hiatt said. "Our network management software will let administrators logically view all the traffic among end nodes. A simple drag-and-drop capability will let them move nodes from one network to another."

Network administrators will appreciate that capability because it will eliminate "Sneakernet" management — the need to physically move network devices or users from one network to another.

Eric Hindin, a senior consultant at Strategic Networks Consulting, Inc. in Rockland, Mass., said he liked the CCNA blueprint. It defines specific product capabilities such as virtual LAN and segment switching, which are necessary to keep pace with the market, he said.

Chipcom's initial management offering, due out this summer, will be the Ondemand ATM Campus Manager for IBM's NetView/6000 platform, sources close to the company said (see box).

The second phase of products will be delivered during the next 12 months, Hiatt said, although he declined to provide specific details.

Sources said the Phase Two products will include an Ondemand ATM Campus Manager software package for Hewlett-Packard Co.'s OpenView platform.

Additionally, Chipcom will release a slew of options for the Oncore hub. These include a Cisco Systems, Inc. 4500 routing module with an ATM interface, full 155M bit/sec. ATM user-to-network interface (UNI) modules and adapters, an Onsemble LAN-to-ATM bridge and an ATM interface for the Artel Galactica switch.

In Phase Three of the CCNA strategy, the company will ship products within the next 18 months that "enhance the Phase Two offerings and provide fully ATM Forum-compliant switched routing capabilities," Hiatt said.

Product lineup set

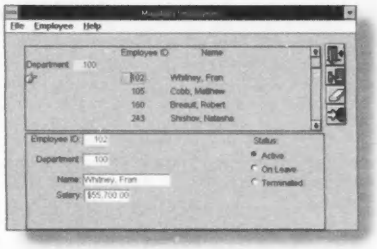
CCNA products slated to ship in the second quarter include the following:

- An ATM-ready, 17-slot Oncore switching hub
- An ATM 17-slot Backplane Upgrade for Oncore
- An ATM Switch/Control Point Module for Oncore
- A stand-alone Onsemble ATM Workgroup Concentrator
- A 100M bit/sec. UNI Module for Oncore
- ATM 25.6M bit/sec. adapters for the Industry Standard Architecture and Micro Channel Architecture buses; 100M bit/sec. ATM adapters for Extended Industry Standard Architecture and S buses

DEVELOPER PRODUCTIVITY COMPARISON

Sybase

PowerBuilder 4.0



52 lines of code

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dw_d
Maste
IF dw
  CO
  Mes
ELSE
  ROL
  Mes
END
Menu
w_em
Menu
w_em
Menu
PrintS
Menu
Close
Menu
w_em
Menu
w_em
)
Menu
Show
```

```
ELSE
  COM
  dw_m
  dw_m
END I
Master
ed
long er
long ro
rownur
empnu
IF dw_
  COM
ELSE
  ROLI
  Messa
detail")
END I
Master
close(p
Master
dw_det
dw_det
dw_det
Master
```

```
Application.Open
SQLCA.DBMS=ProfileString("PB.INI","Data
base","DBMS"," ")
SQLCA.DbParm=ProfileString("PB.INI","Da
tabase","DbParm"," ")
open(w_employees)
Application.Close
DISCONNECT using SQLCA;
IF SQLCA.SQLCODE <> 0 THEN
  ROLLBACK using SQLCA;
  MessageBox("Disconnect",SQLCA.SQLER-
RTEXT)
END IF
MasterWindow.Open
CONNECT using SQLCA;
IF SQLCA.SQLCODE <> 0 THEN
  MessageBox("Connect
Error",SQLCA.SQLERRTEXT)
  HALT
END IF
dw_master.settransobject ( sqlca )
dw_detail.settransobject ( sqlca )
IF dw_master.Retrieve() = -1 THEN
  ROLLBACK using SQLCA;
  MessageBox("Retrieve","Retrieve Failed")
```

** Taken directly from "PowerBuilder Getting Started"
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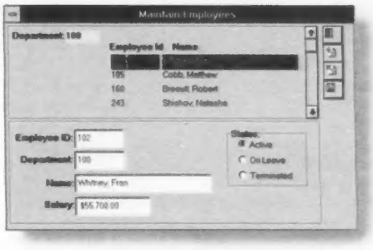
Oracle

Developer/2000



4 lines of code

```
exit_form;
create_record;
delete_record;
commit_form;
```

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Users: Problems with Compaq notebooks linger

By Michael Fitzgerald and Jaikumar Vijayan

Compaq Computer Corp. claims its laptop quality problems are history, and the company recently released a slew of enhancements to its portable products.

But the fixes do not appear to have mollified some customers. In fact, user reports suggest that the desktop leader's notebook troubles are far from over.

Last week, for instance, a Lotus Development Corp. executive said the company is fed up with the problems that have plagued the LTE Elite since its release last March.

Lotus is now considering dumping its longtime notebook standard in favor of another vendor's products.

Lotus has suffered what many other Elite customers have also endured: problems with bad read-only memory chips, motherboard troubles and the infamous sticky trackball [CW, Dec. 26, 1994/Jan. 2, 1995].

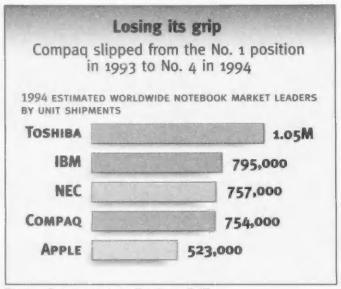
In other cases, Compaq is losing high-profile accounts because it cannot compete on features. Take MCI Communications Corp., for example. The telecommunications giant recently selected IBM PC Co. ThinkPads over Elites and products from several other vendors in part because IBM's machine was richer in features.

At Burroughs Wellcome Co. in Durham, N.C., the firm had standardized on Compaq's 386 notebooks but was preparing to move to another vendor for 486 notebooks, according to sources at the company. However, the move was put on hold after a recent takeover.

Compaq officials last week admitted that market lapses last year have hurt, but they said the firm is regrouping.

"Clearly we've been hit by what happened last year," said Jerry Meerkatz, director of North American marketing at Compaq. The company saw its market position fall from No. 1 to No. 4 last year, according to Dataquest, Inc.

Meerkatz said Compaq has not encountered any new hardware problems since Elite's power supply blemish of last December. He also said Compaq has worked aggressively to address issues across its notebook line.



Source: Dataquest, Inc., San Jose, Calif.

What customers say

But the problems persist, if only intermittently.

"We've had two or three systems in the last couple of months that needed new system boards — almost out of the box," said Thomas Hendrican, manager of network and PC services at Philips Electronics North America Corp. in New York. Hendrican said the problems have been "off and on. We'll get a number that are fine and then some that aren't."

Hendrican said Philips has experienced "almost as many problems with the [Compaq] SmartStation" docking units as with the notebooks.

It appears Philips is not alone. At a recent conference held by Gartner Group, Inc. in Stamford, Conn., a number of users confirmed problems with Compaq's hardware.

"We've received numerous complaints from clients on the quality of Compaq's portables, as opposed to their desktops or servers, said Leslie Fiering, vice president of Gartner's PC service. "We're certainly concerned by this and will be looking into the matter further."

Many users contacted, including Hendrican, said they would stick with Compaq in part because of the company's improved service programs and in part because they use Compaq's docking stations. Docking station designs are proprietary to each vendor, so switching brands means buying all new ones.

Other users contacted last week said Compaq appears to have fixed its quality problems, and several said they were quite happy with the vendor.

Still, there is the question of whether Compaq's woes with the Elite are causing it to fall behind in delivering notebook technology expected this summer. Meerkatz insisted that was not the case. Yet Compaq has formed a strategic partnership with Taiwan's Inventec Corp., through which it will gain premium-class Pentium-based notebooks with CD-ROM drives. That it would turn to a partner for such a cutting-edge product signals that Compaq has fallen behind in developing technologies.

While Compaq's market share is down, its sales remain strong thanks to a booming business in the overall portable market. But analysts cautioned that the company probably will need more time to fully recover from last year's difficulties.

Playing hard ball in court

In a sharp escalation of competitive tensions, desktop leader Compaq last week filed suit against Packard Bell Electronics, Inc., alleging unfair and deceptive trade practices.

The suit, filed by Compaq in U.S. District Court in Wilmington, Del., also accused fast-rising Packard Bell of false and misleading marketing and misrepresenting some of the capabilities of its systems.

In December, Compaq sued Packard Bell for patent infringement in its desktop and notebook products.

In its complaint last week, Compaq also claimed that Packard Bell is disassembling its returned products for their component parts and reusing these parts in products that are ultimately sold as new.

Both companies last week refused to comment on the details of the suit.

Analysts speculated that Compaq may have begun to feel the heat from the blistering pace set by Packard Bell last year.

"Compaq wants to succeed in the consumer market, and [the company feels] threatened by Packard Bell" in the consumer and small business markets, said Jennifer Munson, an analyst at WorkGroup Technologies, Inc. in Hampton, N.H.

— Jaikumar Vijayan

News Shorts

IBM gears up to tackle BackOffice

Look for **IBM** to roll out a competitor to **Microsoft Corp.**'s BackOffice suite by year's end. Steve Mills, general manager of IBM's Software Solutions Group, last week told *Computerworld* that the suite will include pieces such as an OS/2 server, database server and application server — all ready to plug in and use. Separately, he reaffirmed IBM's commitment to OS/2 and said it is in production use at several customer sites. "You may see this as a niche market, but we will no more leave them hanging than leave MVS users hanging," Mills said.

Who needs Windows 95?

Microsoft Corp. last week reported a net income rise of 55% to $396 million for its third fiscal quarter. Net income was up 39% to $1.09 billion for the year to date. Reports of buggy beta versions and possible further delays in Windows 95 did not seem to slow the Microsoft juggernaut. Sales for the third quarter were up 28% to $1.59 billion, beating analyst estimates. Booming PC sales and heavy demand for Microsoft's office software fueled its surge.

Andersen tunes outsourcing

Andersen Consulting last week announced an alliance with General Electric Capital Corp. in Stamford, Conn., expanding its business process outsourcing to mainframe-based information systems operations.

Andersen's strategy calls for client companies to turn over internal functions such as logistics, human resources or customer service and the accompanying IS operations to Andersen. The consulting giant intends to sell its Dallas-based data center to GE Capital, which will act as a subcontractor providing mainframe services to Andersen clients.

Magstar ready to roll

Convex Computer Corp. and **E-Systems, Inc.**'s Emass storage subsidiary said they plan to resell the high-capacity Magstar tape drives and cartridges that IBM introduced last week. Convex in Richardson, Texas, will also market IBM's 3494 automated tape library, which can store more than 3T bytes of uncompressed data using the 10G-byte Magstar devices. Emass in Englewood, Colo., offers the Magstar drives in its AML libraries. Magstar provides 12 times the capacity and three times the data transfer rate of 3480/3490 tape technology.

Outsourcers pick CA

Computer Associates International, Inc. has announced long-term enterprise software licensing agreements with two facilities management firms. **The Genix Group** signed a 10-year deal to standardize on CA products for its IBM MVS, VSE and client/server platforms. In a separate agreement, **Software Maintenance Specialists** in Santa Ana, Calif., signed a five-year licensing pact for CA mainframe, application development and systems and database management software for its outsourcing clients. The companies did not disclose the financial terms of the agreement.

SHORT TAKES A group of **Powersoft** salespeople in Hong Kong jumped ship to **Gupta Corp.** recently, *Computerworld Hong Kong* reported last week. The departure was attributed to bad blood between local **Sybase, Inc.** and Powersoft employees. Sybase acquired Powersoft last year.... **Parametric Technology Corp.** in Waltham, Mass., has completed a $34.5 million purchase of **Evans & Sutherland Computer Corp.**'s mechanical design software business.

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intel NOVELL

DEC fires TurboLaser at mainframes

By Neal Weinberg

Digital Equipment Corp. fired a laser beam — make that a TurboLaser beam — at the glass house last week.

But many large systems customers ran for cover behind their trusty mainframes rather than open the door to the 64-bit Alpha invader.

As part of what may be the splashiest and most upbeat Digital announcement in years, the company displayed a TurboLaser 8400 running new Oracle Corp. database software designed for 64-bit computing.

Pauline Nist, vice president of Digital's server business segment, said that because the high-end AlphaServer can store 14G bytes of data in memory, it offers "performance beyond the mainframe" for complex data queries.

Jim Bodenbender, senior vice president of marketing at First Data Health Systems Corp. in Charlotte, N.C., said he is looking forward to putting together hospital record systems based on TurboLaser.

"We see a real advantage [because] we'll be able to store massive amounts of data in main memory," he said.

Most analysts were bullish on the product launch, as Digital stock soared to a 52-week high of almost $43 last week.

Tom Willmott, an analyst at Aberdeen Group in Boston, said TurboLaser could be the product that starts generating the type of revenue Digital needs to fuel its comeback. But he cautioned that despite the hype, large shops are far more likely to experiment with one TurboLaser before they make any major mainframe decisions.

Issues to consider

TurboLaser is "a good box" that is suitable for some applications, but "people are not going to go out and make a headlong rush to convert applications off the mainframe to go off on alternative platforms," said Charlie Burns, an analyst at Gartner Group, Inc. in Stamford, Conn.

"There's more to the equation than how fast does it run," Burns said. Traditional mainframes have industrial-strength software and a level of security and reliability that other systems cannot match, he said.

A milestone

Digital says it has already taken orders for 75 TurboLasers, which means it has just about surpassed the sales of its ill-fated VAX 9000, the company's previous mainframe killer.

Some longtime IBM customers said they remain partial to their current hardware running IBM's MVS operating system and DB2 database.

"MVS is still the most dependable and high-throughput central [system] for handling data," said Wayne Pattison, director of data center operations at Kansas City Southern Railway Co. in Missouri. "I don't think you'd find anybody who can deny that with a straight face."

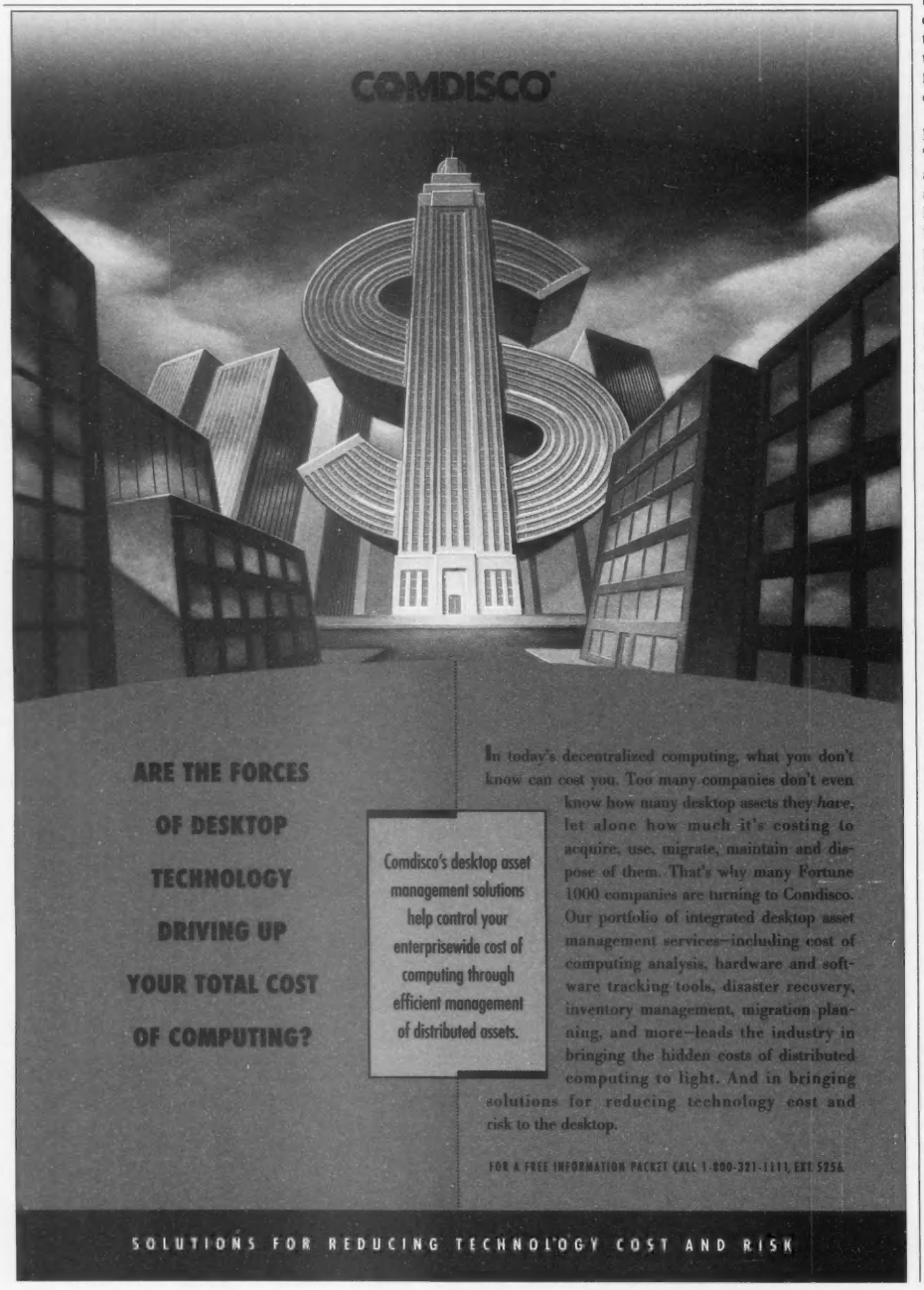
CSX Corp., a transportation company in Richmond, Va., uses several of Digital's older VAX systems as servers for its Macintosh networks. But CSX does its business processing on mainframes and is not inclined to switch horses, said Doug Underhill, a technology specialist at the company's information systems unit.

TurboLaser "could well be quite powerful, but it would be an enormous undertaking to rewrite our big MVS applications," Underhill said.

Digital's claims of price/performance leadership hit a raw nerve at IBM. "I don't understand how they can make statements like that," said Kevin Moonan, vice president of marketing for IBM's System 390 division. "IBM wrote the book. As far as I'm concerned, [Digital is] playing catch-up."

The starting price for TurboLaser is $200,000.

Senior editor Craig Stedman contributed to this story.



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Imaging show highlights vertical markets

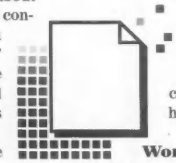
By Tim Ouellette
SAN FRANCISCO

The workflow and imaging market is shifting from an emphasis on technology breakthroughs to the business advantage of vertical market packaging. That was the overriding theme for users and analysts gathered at the Association for Information and Image Management's AIIM '95 conference here last week.

The market is "now about partnerships, vertical markets, channels. It's not a technology story anymore," said Gerry Murray, an analyst at International Data Corp. in Framingham, Mass.

Timely rewards

"Most users don't give a rat about the technology. They are concerned about the payback in a predictable period of time," said William Zastrow, vice president of Data General Corp.'s imaging business unit.



Many of the users at the show, which attracted more than 42,000 attendees, were clearly drawn to open systems products for their particular industry's needs. Wang Laboratories, Inc., FileNet Corp., Recognition International, Inc., ViewStar Corp. and Unisys Corp. were among the vendors displaying applications specially designed for users in government, finance, insurance, health care, education, legal services and transportation.

For some customers, having a readily available, reliable solution with clear benefits is a clear winner over tackling integration on their own. "We will continue to buy turnkey systems. We are not going to do in-house integration of imaging," said Barbara Beasely, a supervisor at PacifiCorp. Financial Services.

The Portland, Ore., company has already contracted for an imaging system with a systems integrator. "The intent is that someone in the field needs only one imaging client on their PC," she said. The systems integrator was chosen because of its experience in the legal field, she added.

Sallie Mae, the Student Loan Marketing Association in Herndon, Va., is using an imaging project that goes beyond improving one business function.

"We are into more than imaging. This project will revamp how Sallie Mae does business," said Alan Tucker, assistant vice president of imaging. He said he expects a three-year return on investment for the $55 million contract with Price Waterhouse.

Workflow solutions

Overall, products are increasingly focused on solving an existing business problem. "This year the emphasis is on workflow in specific applications. It is more focused on business analysis so that it is easier to justify the investment," said Thomas Koulopoulos, president of Delphi Consulting Group in Boston.

One example is I.A. Corp.'s WorkVision software, which targets geographically dispersed service organizations. WorkVision's object-oriented design supports production — high-volume workflows such as claims processing — as well as ad hoc workflows, in which a person must deal separately with an exception to workflow rules, such as a wrong customer identification number. The software also supports all data types, including images, graphics, voice, video and text.

On the groupware front, Lotus Development Corp. announced it would include a Lotus Image Viewer and a print-to-fax driver in its Notes and CC:Mail software. This announcement is similar to an agreement between Wang and Microsoft Corp. to incorporate Wang's image viewer in future versions of Windows 95 and Windows NT (see related story, page 14).

Whatever way users begin incorporating imaging into their business, successful use of the technology can serve as a catalyst for change in an organization. Beasely said document center users at PacifiCorp. have become spoiled because searches of regulations can be performed very quickly, documents are no longer lost or checked, and storage space requirements have been cut back. And other departments have noticed.

"We're rolling out the technology to other departments in the corporation," she said. "Success in imaging really captures peoples' attention."

Visual Basic apps get workflow. See page 84.

On the same page

Realizing that they stand a better chance of surviving as a single entity, two document management groups joined forces at the AIIM show.

The Document Management Alliance (DMA) replaces the Shamrock Document Management Coalition, founded by IBM and Saros Corp., and the Document Enabled Networking (DEN) group, founded by Novell, Inc. and Xerox Corp last year.

Document management is the catchall term for a range of software applications and specifications used to manage and control the availability and use of documents on a network.

The alliance makes a lot of sense as document management becomes increasingly important in organizations, said Thomas Koulopoulos, president of Delphi Consulting Group.

"Shamrock and DEN were almost parallel in their paths," said Pat Berastegui-Egen, director of data access at Provident Life and Accident Insurance Co. in Chattanooga, Tenn. "One of the problems with initiatives is there are a million of them. Having one makes things easier."

In July, the DMA plans to have a preliminary document management specification, which will define library services as well as middleware to allow access across different platforms. The DMA said they also expect about 35 vendors to join the group, with products to follow in about a year. — *Suruchi Mohan*

IBM drags feet on OS/2

CONTINUED FROM PAGE 1

opers the benefits of creating products for OS/2.

But to date, fewer than one-third — just 300 — of the developers on Gerstner's list have been contacted, an IBM official confirmed last week. This means that in two weeks, each of the 100 IBM executives made an average of three calls to potential OS/2 developers.

Random calls by *Computerworld* to 10 first- and second-tier developers last week produced only one who had been contacted by IBM in the past two weeks.

"The executives understand that this is to be done as soon as possible, and so far we have been pretty successful," said a spokesman for IBM's Personal Software Products group in Austin, Texas.

Some difficulties

IBM's attempts to make OS/2 Warp successful have produced poor reviews from industry observers.

"One of OS/2's biggest problems has not been Microsoft but IBM," said Will Zachmann, a vocal OS/2 supporter and president of Canopus Research in Duxbury, Mass. "The IBM PC Co. has been traitorously disgraceful with regard to OS/2. Sometimes they act like they are working for Microsoft rather than IBM. Gerstner is making it clear that the whole company better get on board or get kicked off the bus."

IBM has historically struggled internally over whether it should develop for more popular rival platforms or just deliver software for its own operating systems.

But so far, the third-party response to IBM's OS/2 push has been lukewarm.

For example, Mark Caulkins, vice president and general manager of WordPerfect, the Novell, Inc. Applications Group, in Provo, Utah, said if IBM would provide a Win32 application programming interface (API), "we might think about it. Otherwise it's not worth it to us."

He explained that the development process takes so long that the OS/2 version would be six months behind the Windows version, and localized international versions would be another 30 to 60 days behind that. "By the time you get the products out, it's a joke," Caulkins said.

Also at issue is the lack of development tools, according to Irfan Salim, president and CEO of Software Publishing Corp. "And that makes doing OS/2 products a ground-up kind of effort."

Software Publishing was contacted a few months ago by IBMers who appeared to be making the rounds in Silicon Valley to drum up OS/2 support. However, the Santa Clara, Calif., developer was burnt by costly OS/2 development efforts in the late 1980s. It spent a hefty amount to develop an OS/2 Presentation Manager version of its Harvard Graphics product, only to be left with a smaller-than-anticipated market when Microsoft dropped out of the joint development deal with IBM and pushed its Windows operating system instead.

This time around, to ease developer concerns, Lee Reiswig, general manager of IBM's Personal Software Products division, said that a subset of the Windows 95 APIs will be included in the next release of OS/2 Warp.

But for IBM, the OS/2 battle has been uphill all the way. IBM has spent more than an estimated $2 billion on OS/2 development and marketing since 1987. Six upgrades and several delays later, the operating system still claims only about 2,500 applications. Windows has 28,000 applications.

Conspicuously absent are the major software players that could help attract more users to the platform. Lotus Development Corp. is among a handful of industry heavyweights with an OS/2 offering; it also has a Notes-related alliance with IBM.

For some developers, OS/2, with 8 million users, does not provide a big enough incentive compared with 70 million Windows users or 17 million Macintosh users.

"For us, the test is economic viability, and OS/2 hasn't passed that test. But never say never," a Claris Corp. spokesman said.

One developer recently contacted by IBM gave mixed reviews of the experience. "They appear to be getting more aggressive, and we'll certainly talk to them," said Jon Scott, president of Traveling Software, Inc. in Bothell, Wash. But Traveling Software Chairman Mark Eppley was a little more flip, sarcastically suggesting that his company "planned to drop all other development efforts immediately in favor of OS/2."

Traveling Software has not previously done OS/2 development because "you have to go where you get the most bang for the buck," Scott said.

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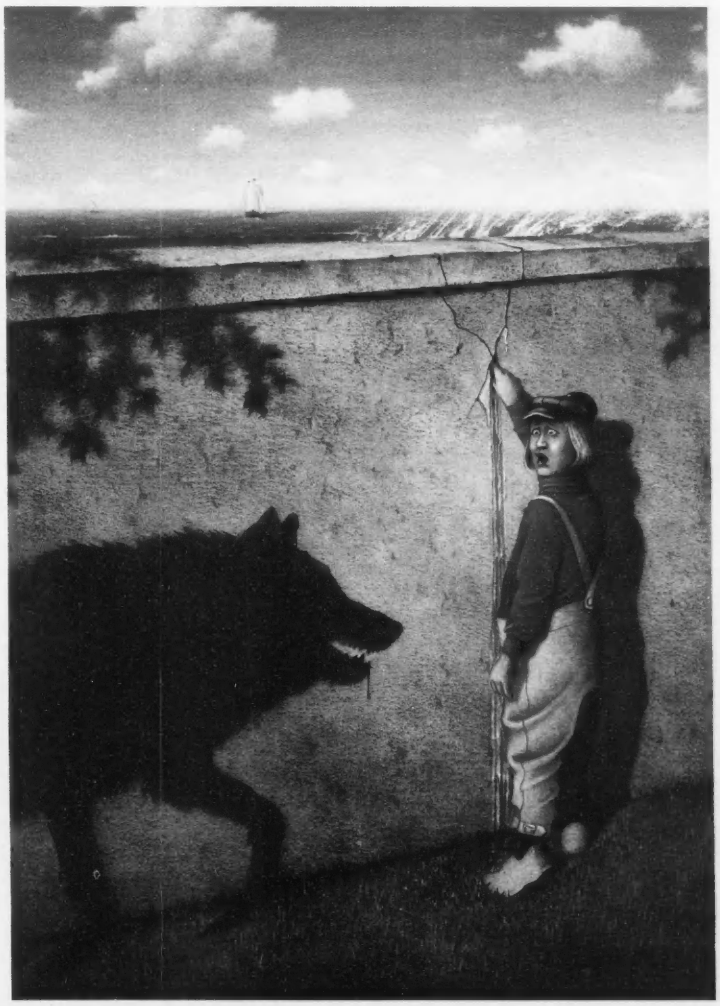

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Internet security boosted

By Ellis Booker
SAN JOSE, CALIF.

Seeking to avert a standards war over Internet security schemes, Terisa Systems, Inc. last week said it will incorporate two transaction security standards — Secure HyperText Transfer Protocol (SHTTP) and Secure Sockets Layer (SSL) — into a commercial tool kit expected to ship in June.

Commercial products supporting both protocols should ship by the third quarter, Terisa executives predicted.

There was also an announcement at the Spring Internet World '95 conference that a coalition comprising America Online, Inc. CompuServe, Inc., IBM and Netscape Communications Corp. had taken equity investments in Terisa, a Menlo Park, Calif., developer of a commercial version of SHTTP.

Enterprise Integration Technologies, the original developer of SHTTP in Menlo Park, and RSA Data Security, Inc. in Redwood City, Calif., launched Terisa in 1994. The companies continue to maintain an undisclosed stake in the company.

Observers were most excited by Netscape's presence among the new investors. That is because Netscape had been aggressively pushing adoption of its competing SSL protocol for Internet clients and servers.

However, the two secure transaction protocols actually occupy different levels of the Open Systems Interconnection protocol stack and are more complementary than competitive. SSL works close to the network level, securing TCP/IP sessions, while SHTTP is a message-level protocol for HTTP-based World-Wide Web servers and clients.

Nevertheless, the two had been moving toward a pitched competition in recent months, and Netscape recently got 18 companies to support SSL.

"It was shaping up to be a standards war," said David Kaiser, vice president of Websoft, an America Online subsidiary.

Kaiser, who was widely credited as having brokered the joint investments in Terisa, said the friction between the two schemes was confusing the marketplace.

Worries over security on the Internet has been consistently cited as the prime obstacle to the Internet's commercialization.

"We're interested in supporting any methodology that delivers secure transactions to merchants," said Scott D. Dueweke, an account executive at NaBanco Direct, a unit of National Bancard Corp. in Sunrise, Fla. NaBanco is also the world's largest processor of credit-card transactions, with 18% to 20% of the industry's transaction volume.

But the marriage of SHTTP and SSL was not universally celebrated. Conspicuously missing from the panel of Terisa backers last week were executives from Spyglass, Inc., the Savoy, Ill., company responsible for licensing commercial versions of Mosaic, the graphical user interface developed by the National Center for Supercomputing Applications. Spyglass is also a key supporter of SHTTP and recently announced plans for a $100 Web server using SHTTP.

"We'd rather see this activity coming through the standards bodies," a Spyglass representative said. He also expressed concern that the integrated SHTTP/SSL would be available exclusively from Terisa rather than as an openly published specification, as is the case with SHTTP.

Others agree

This point was echoed by Shikar Ghosh, president and chief executive officer of Open Market, Inc. in Cambridge, Mass.

"Security is an issue that needs broad agreement," he said. Last month, Open Market became the first vendor to release a Web server that supports both SHTTP and SSL.

Terisa officials were not available for comment, but at its announcement last week, the company said it intends to work with the Internet Engineering Task Force and the World Wide Web Consortium standards bodies to create a common security standard.

In the interim, Terisa said it would make runtime versions of its products "available at an affordable price."

Secure IBM

IBM also weighed into the security protocol game last week with the announcement of IKP, a transaction-level protocol to secure multiparty sessions involving buyers and sellers. IBM's own software implementation of its open specification, called Snap-In, has not been priced, but IBM sources said to watch for shrink-wrapped products by year's end.

New Web facilities shown at Internet World. See page 66.

Advancements aid commerce on 'net

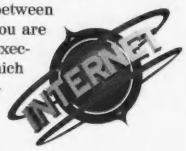
By Ellis Booker
SAN JOSE, CALIF.

■ Roadblocks to widespread commercial use of the Internet were pushed onto the shoulder last week at Spring Internet World '95, which showcased significant advancements in the areas of security, tools and services.

Topping the news was the apparent end of a distracting competition between two security protocols — Secure Sockers Layer and Secure HyperText Transfer Protocol — via the promise of an integration of the two schemes before year's end (see story at left).

Also on the security front, there was a plan out of the CommerceNet consortium to launch a certification authority pilot for the group's 100 members.

The pilot, which is believed to be the first exclusively targeted at Internet domains, will be based on public key encryption technology from RSA Data Security, Inc. "Along with securing the transaction between parties, you have to know who you are talking with," said Cathy Medich, executive director of CommerceNet, which celebrated its first year anniversary last week.



CommerceNet officials said they hope some of the group's members, which include the country's largest banks and credit-card companies, will learn enough from the pilot to roll out commercial certification authorities that are able to scale to millions of buyers and sellers.

Seven of CommerceNet's members have already received the so-called "certification certificates."

Everyone gets into the act

Companies large and small are now eyeing opportunities to provide secure environments for business.

Even The Well, the venerable decade-old electronic community in Sausalito, Calif., announced plans last week to support transactional systems using Netsite servers from Netscape Communications Corp.

The first customer for the new offering is The Well's affiliate, Point Foundation, the publisher of the *Whole Earth Catalog* and *Whole Earth Review*. Although well.net is for commercial ventures, "I doubt you'll see Sears here," admitted Mark Graham, president of The Well's Whole Earth Networks unit.

Likewise, IBM plans a fall debut for both IBM-branded and customer-specific malls, according to Mark N. Greene, vice president of global electronic markets at IBM's Electronic Commerce Services Division.

But before IBM felt comfortable entering this arena, it wanted to help deploy the infrastructure to support it, Greene said.

Last week at Internet World, for instance, IBM introduced InfoMarket Search, a network service for searching, retrieving and prioritizing information on the Internet or private networks. Greene said to watch for summer announcements of other products that provide "smart" user interfaces and industrial-strength on-line transaction processing business systems for Internet commerce.

One of the most interesting of IBM's product demonstrations last week was DB2/WWW, which supports an Internet World-Wide Web server as a secure front end to accessing a DB2 host database.

"The goal here is to link a Web presence against core business systems," said John Patrick, IBM's vice president of Internet applications. Pricing and availability for DB2/WWW have yet to be set.

New standard targets mainframe data traveling over IP networks. See page 65.

Win 95 polishes Wang image

By Tim Ouellette and Neal Weinberg

Wang Laboratories, Inc.'s stock is rising in more ways than one on the heels of a settlement with Microsoft Corp. that should give Wang's imaging business an entree into the Windows 95 market.

Last week, Wang ended a 21-month-old patent infringement suit that charged Microsoft with violating Wang patents in its OLE standard. Under a unique settlement, Microsoft will buy 10% of Wang for $90 million and has agreed to embed Wang imaging software in future releases of Windows 95.

Wang stock hit a 52-week high of $16.50 a share last week, up from $9 a share in December.

As a result of the settlement, every copy of Windows 95 after the initial release will display the Wang name on the screen, said Scott C. McCready, an analyst at International Data Corp. (IDC) in Framingham, Mass.

"It's a big boost for Wang," said Bert Regensburger, president of the International Society of Wang Users. "When Microsoft stands behind something, there's some credibility to be had, and Wang has been searching for it" since it emerged from bankruptcy in 1993.

In addition to Wang's desktop imaging and object controls becoming standard features of Windows 95, both companies will develop open workflow application programming interfaces that will be supported by Wang's Open/Image and Open/workflow software and Microsoft's Exchange workgroup software.

The agreement brings to the desktop a technology that has been hidden away in specialized departments, said Gerry Murray, an IDC analyst. "This has the potential to ignite some grassroots brushfire" of interest in imaging, he said.

Moreover, Microsoft's endorsement could tilt the imaging playing field in Wang's favor, Regensburger said, because a company with client software built into its PCs will lean toward buying server software from the same vendor. He also said Wang's longtime VS minicomputer customers will also benefit from "the opportunity to use imaging with a company that you're already familiar with."

Legent offers helpful Paradigm

By Steve Moore

With an eye toward helping organizations broaden their narrowly focused help desks into versatile customer service centers, Legent Corp. in Herndon, Va., last week launched an application suite that supports problem management and change management across both client/server and host computing environments.

Legent's Paradigm/XP Process Management Suite combines the company's Paradigm/XP Problem Manager with three new applications designed to smooth the customer service workflow associated with problem and change management.

Problem management involves responding quickly and correctly to end users stricken by hardware or software glitches. Change management deals with requests to move, add or change computer and network equipment.

Rapid response

"Help desks usually are only associated with problems, but Legent is moving beyond trouble ticketing to manage processes so that customers can call a service desk to get change orders handled," said John McConnell, president of McConnell Consulting Co. in Boulder, Colo. He noted that users want the service call process to quickly generate and resolve trouble tickets and change orders.

"Legent must show that a single call to a service desk is all it takes to get any of those functions taken care of," he said.

Suite for Legent

New applications in Legent's Paradigm/XP Process Management Suite

Application/ Availability	Function
Paradigm/XP Call Manager *Q3 1995*	Speeds service desk response to user calls
Paradigm/XP Knowledge Manager *Q3 1995*	Provides access to service-related documents, cases and procedures
Paradigm/XP Change Manager *Q4 1995*	Initiates, tracks and manages service requests

McConnell cautioned that while there is good integration among Legent's available Paradigm/XP applications, "we won't know how well integrated the [Process Management Suite] applications are until the third quarter when the final pieces of the suite arrive."

For their part, users found the broad scope of the Legent suite appealing.

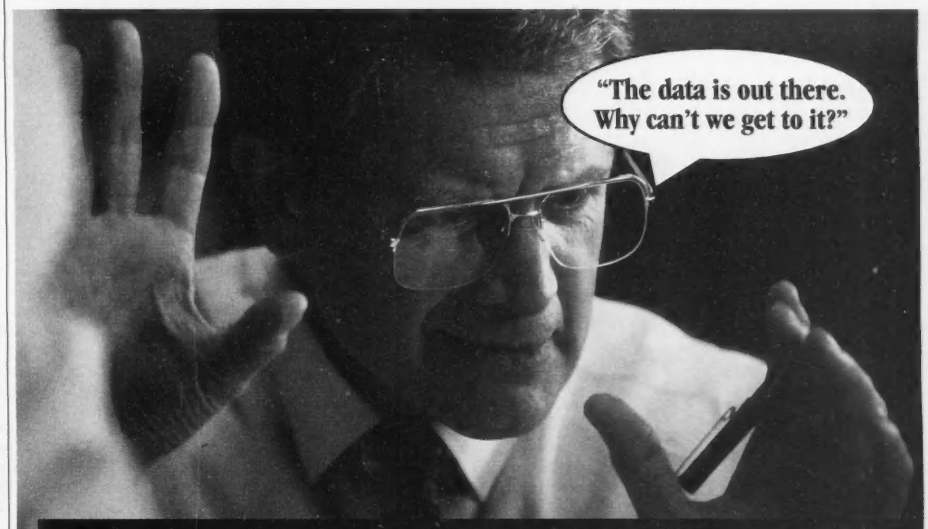
"There has not been a company that has provided this range of distributed management products across all platforms," said Wade Brown, chief information officer at Washington National Corp. in Lincolnshire, Ill. Brown said Legent is providing interfaces for customizing the Paradigm/XP Process Management Suite, and Washington National intends to use those interfaces to tie its environmental systems, such as heating and air conditioning, into its customer service center.

Brown added that while Legent's suite does not specifically support problem management for these systems, "they provide an interface into Paradigm, so I can write to it and have [environmental system] alarms centralized so incident reports can be created."

Another user said he liked the Paradigm/XP Process Management Suite's knowledge-based automation capabilities.

"You may get four or five alarms on a single problem, but it looks like [the suite] will allow us to sort those and have only one alarm on the root problem," said Roger Shultz, senior network vice president at RAM Mobile Data USA L.P. in Woodbridge, N.J.

Seattle van service goes client/server. See page 44.



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OLE to expand

CONTINUED FROM PAGE 1

technical direction because of the company's pervasive presence on corporate desktops.

Early next month, Microsoft plans to announce how future versions of OLE will support corporate development of enterprise applications such as transaction processing and database management, a company official confirmed last week.

At the heart of users' current problems with OLE are the difficulties encountered in building applications that take full advantage of the technology. According to developers, working with OLE on the client side of an application is relatively easy and may involve just dropping a widget into an application using a visual application development tool such as Visual Basic.

Difficult to do

However, building OLE automation servers is extremely complex.

"Building OLE servers is where the real difficulty is," said Andy Kaufman, director of workstation development and support at Dun & Bradstreet Marketing Information Systems Division in Schaumburg, Ill. The complexities involved mean that specific application implementations may not work smoothly with other implementations of OLE automation servers.

At the heart of users' current problems with OLE are the difficulties encountered in building applications that take full advantage of the technology.

Kaufman's group is committed to OLE and trusts that distributed OLE "will be there eventually," he said. But "OLE has got to be easier to use for it to really take off."

Microsoft's biggest issue with OLE is credibility, said Judith Hurwitz, president of Hurwitz Consulting Group, Inc. in Watertown, Mass. "They can draw these major strategies on paper, but if they ... don't have answers that show how this is doable," users may lose faith, she said.

Hurwitz said the desktop-based OLE technology is too complex and monolithic, and she questioned whether Microsoft's plans to evolve it so that it can be distributed across the enterprise will deliver the functionality promised. "If they can't get this stuff to work well on the desktop — because it's big, clunky and inefficient — how are they going to get it to work distributed?" she said.

Forcing change

Meanwhile, some development tool vendors predict that OLE will cause a radical shift in how client applications are built because developers will no longer need to write to application programming interfaces. Rather, they will be able to incorporate OCXs into their applications. This will have its greatest impact once tools supporting the use of OCXs are released after Windows 95 becomes generally available.

For example, Rockville, Md.-based Intersolv, Inc., one of the leading independent suppliers of software drivers using Microsoft's Open Database Connectivity (ODBC) standard, plans to make all of its drivers available as OCXs that can simply be dropped into applications to provide database access, according to ODBC product manager David Waller.

Underpinning Microsoft's strategy for enterprise development tools is a repository that the company is developing with Texas Instruments, Inc. Products are expected at the end of 1996, a TI executive said last week.

The repository will store information on applications objects such as OCXs, including what objects are available, where they are located and how to access them.

With the right planning, code can be reused successfully. See page 81.

Improved E-mail features expected

By Suruchi Mohan

As LAN-based electronic messaging becomes more entrenched in organizations, users want increased value from features such as calendaring and scheduling, discussion databases and faxes.

Vendor response to this search will be reflected in several announcements expected at the E-Mail World conference this week in Santa Clara, Calif.

While the big three LAN messaging vendors — Lotus Development Corp., Microsoft Corp. and Novell, Inc. — will be conspicuously absent from the show, IBM will announce shipment of the first release of WorkGroup, its client/server messaging platform.

Due to ship May 26, IBM WorkGroup will integrate calendaring/scheduling, mail, fax, directory and agent technology. In the first release, a messaging server will be available for OS/2. Desktop clients for OS/2 and Windows platforms will be available at $95 per seat.

The electronic-mail show will also set the stage for On Technology in Cambridge, Mass., and TeamWare in Santa Clara, Calif. On Technology will announce shipment of Common Knowledge Version 2.5, software that offers project management, bulletin-board services and administrative functions for Macintosh and Windows users.

TeamWare will announce TeamWare Mail Professional client software. This product allows Microsoft Mail users to mail-enable any application. The company will also announce TeamWare Messaging Server, a client/server messaging backbone.

Novell's NDS changes

CONTINUED FROM PAGE 1

and approached the NetWare 4.1 NDS installs with careful planning reported last week that major glitches were the exception rather than the rule.

But the distributed nature of NDS can wreak far more havoc than the stand-alone bindery emulation mechanism in NetWare 3.x.

As a result, users are increasingly finding their NetWare 4.1 LANs beset by corrupted and inaccessible directories. In other scenarios, users grapple with scrambled time synchronization that can prevent network administrators from making necessary changes or new server installations (see story below).

Once it was easy

Until NetWare 4 came along, network administrators could learn NetWare management on the fly, said Ron Puccinelli, a staff analyst at Bayer Corp. in Berkeley, Calif.

"Users who refuse to recognize that the rules of the game have changed and NetWare 3.x rules no longer apply are in for a rude awakening," Puccinelli said.

"With NetWare 3.x, we only had to worry about screwing up one server. A single NDS screwup can wreak havoc with multiple servers or entire networks," he added.

"The consequences of user error in [an] NDS setup are often unpredictable," said Steve Kalman, a partner at Esquire Networks, a consultancy in Lords Valley, Pa. "When time synchronization is scrambled, users may end up having to reinstall NDS from scratch or restore [it] from a backup" copy.

That is what happened to Mike Jepsen, a systems manager at Medtronics, Inc., the world's largest manufacturer of pacemakers in Fridley, Minn.

"Our NDS time synchronization got scrambled when one of our subsidiaries came on-line. Unbeknownst to us, they had a directory tree with the same name. For an entire week, we couldn't do any moves, adds or changes on 13 NetWare 4.1 servers attached to the main NDS tree," Jepsen said.

To fix the problem, Medtronics will bring all 13 NetWare 4.1 servers down and do a complete reinstallation, which will take more than a day.

Problems are avoidable

While the Medtronics situation was unusual, Howard Lubert, president of Hel Custom Software, Inc., a Novell Platinum reseller and integrator in Wayne, Pa., said the majority of NDS foul-ups are unnecessary.

"Novell bit the bullet and spent millions to make every potential NetWare 4 user aware of the technical aspects and challenges of this product with free seminars, satellite broadcasts and technical materials," Lubert said. "Anyone who hasn't availed themselves of the free training is setting themselves up for failure."

Puccinelli said he has found "NDS to be pretty smooth" after using NetWare 4.1 for eight months.

Jepsen concurred, noting how he made sure Novell engineers were present to assist with the NDS installation and train all of the company's network managers.

"We're using NDS extensively, and in general, it's been very effective," Jepsen said. "Nowadays, when the NDS synchronization gets scrambled, it's usually only during periods of intense activity."

NetWare 2.x users are considering their upgrade options. See page 63.

How to avoid NDS problems

Two of the most common NDS problems inexperienced users are likely to encounter are these:

- **Corrupted NDS database.** This occurs if a network administrator takes the NetWare 4.1 server down for any significant length of time without moving the NDS partition replicas to another server, said Ron Puccinelli, a staff analyst at Bayer.

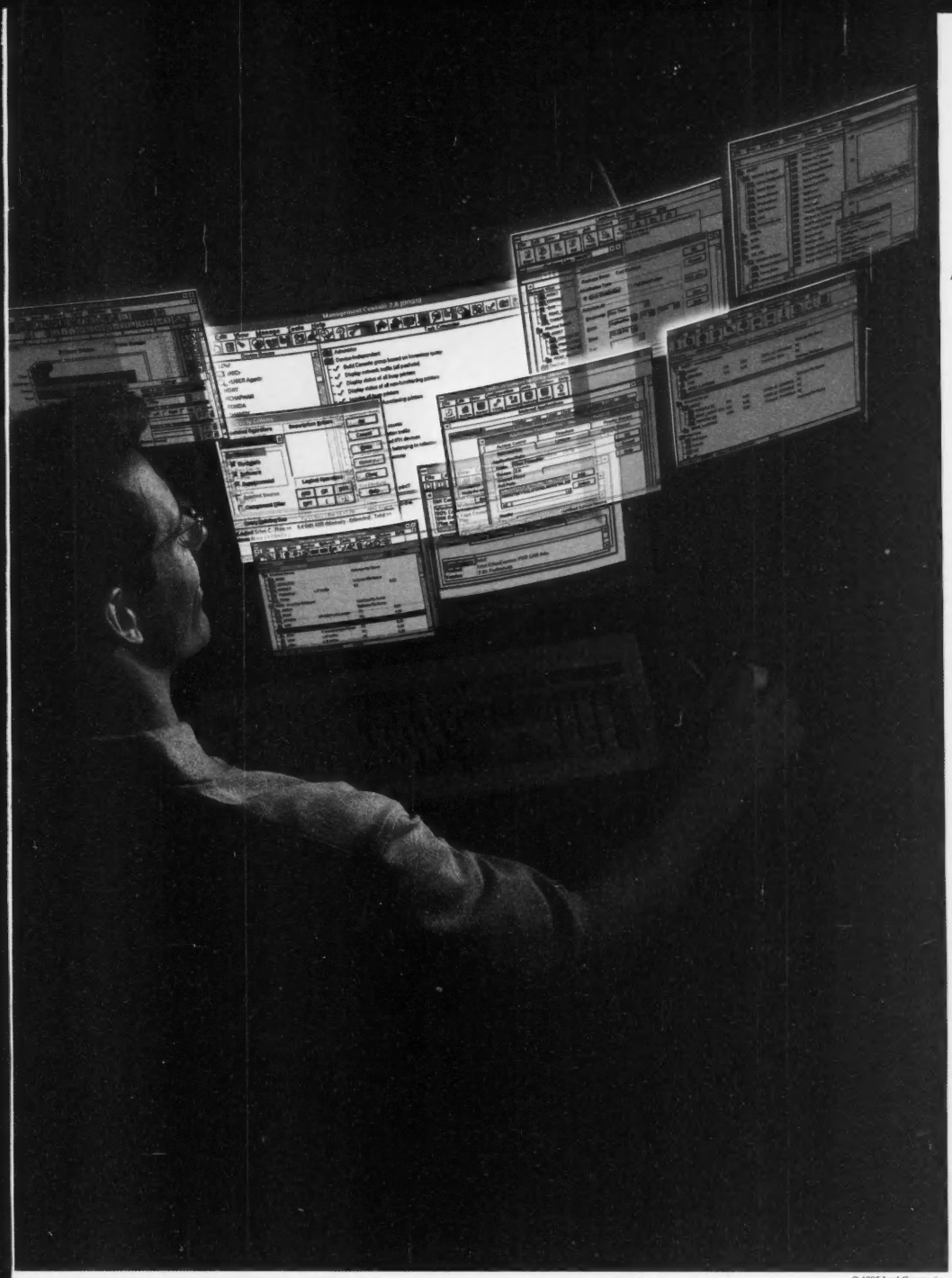
"In a worst case scenario, NDS is corrupted. At the very least, you get locked out of NDS," Puccinelli said.

- **Unmanageable NDS branch.** This happens when a network administrator is the only object in an NDS "container" with management rights. If the management account gets deleted, there is no way to manage the NDS directory or the network.

This is analogous to "locking your keys in the car and welding the doors shut," said Steve Kalman, a partner at Esquire Networks.

The only solution is to reinstall NetWare 4.1 and use the "OrgRole-Admin" object in NDS, Kalman said. This gives the object all rights to the site. "Then you make the network administrator an occupant of the OrgRole, which is like being a member of a group. If the administrator is deleted or his password is lost, you can still assign management rights to someone else," Kalman said.

—Laura DiDio



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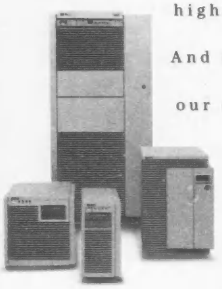

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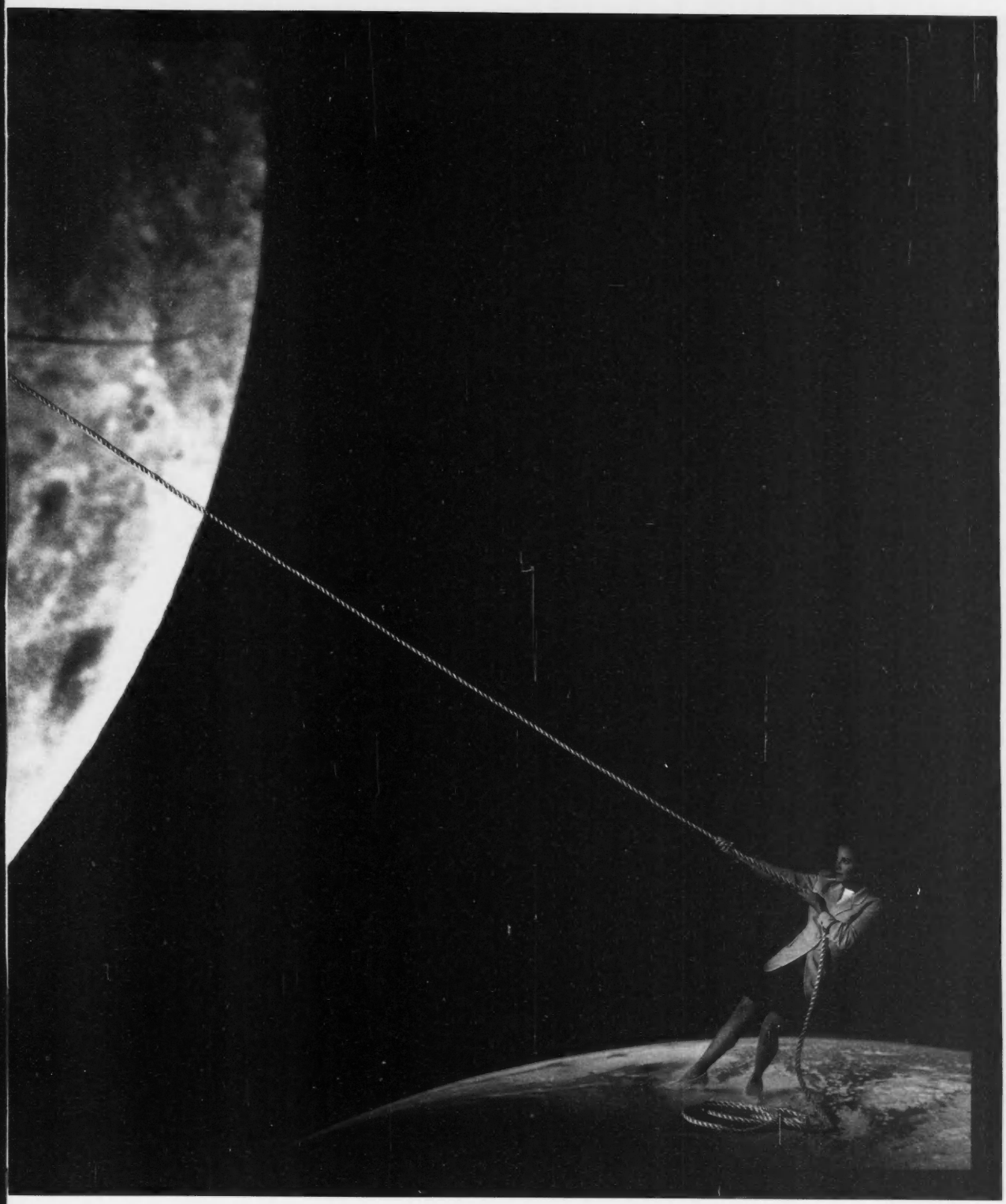


Feds to ease software patent guidelines

By Mitch Betts
WASHINGTON

After years of conflicting rulings, the U.S. Patent and Trademark Office plans to make it easier to get patent protection for computer software.

According to patent experts, the agency is developing new guidelines for its examiners and expects to release them in about 90 days. Those guidelines will reflect recent court rulings such as *In re Alappat* that liberalize the review of software patents [CW, Sept. 5, 1994].

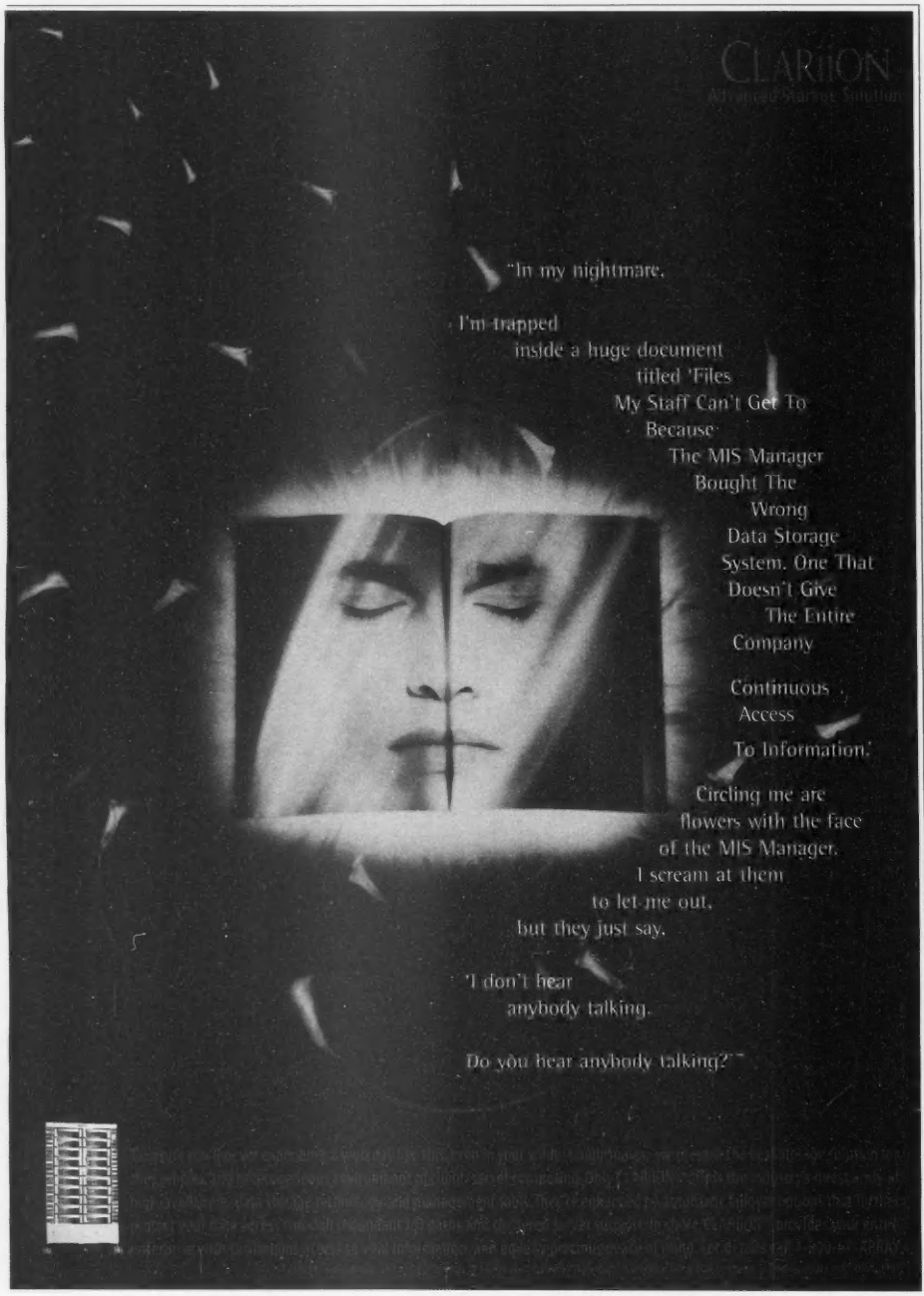
"It looks like they will back down and go to a system where all software is patentable," said Robert P. Bell, a patent attorney in Alexandria, Va.

The change of heart comes at a time when the scope of copyright protection for software is being trimmed back. For example, a recent appellate court decision in the ongoing *Lotus Development Corp.* v. *Borland International, Inc.* case ruled that copyright does not extend to the "look and feel" of Lotus' 1-2-3 interface.

Nancy Linck, the patent office's solicitor, said in a written statement that updated treatment for software patents is needed to protect the intellectual property of a vital U.S. industry that accounts for 5.6% of the nation's gross domestic product.

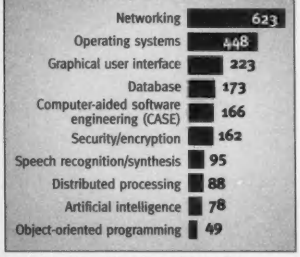
In the past, the agency and some judges have been hostile to software patents, arguing that software is akin to mathematical formulas, which cannot be patented. So creative attorneys have used a backdoor method to acquire patents, claiming the software is embedded in a machine, device or process.

Under this scheme, the agency has granted more than 15,000 software-related patents since 1970, including 4,569 last year, according to Gregory Aharonian, editor of the Internet Patent News Service in Belmont, Mass.



Pick a patent

The type and number of software-related patents granted in 1994 included the following:



Source: Internet Patent News Service, Belmont, Mass.

The guidelines may bring some clarity to a patent system geared more toward inventions such as better mousetraps than the complexities of computer software. "There's a lot of confusion among the courts, the patent office, software companies, lawyers and inventors," Aharonian said.

The patent office also said it is reconsidering its past opposition to IBM's bid to patent a graphics program stored on a floppy disk. In the pending case of *In re Beauregard*, the patent office said the disk contained "totally passive printed subject matter," which is unpatentable.

The prospect of the patent office reversing its position on *In re Beauregard* could open the door to more patents for software and multimedia CD-ROMs.

"It does appear that the [patent office] leadership is moving toward *Alappat* and increased patent protection for software," said Peter K. Trzyna, a patent attorney at Keck, Mahin & Cate in Chicago. "Right now, the patent examiners are perking along under pre-*Alappat* law."

Critics such as Aharonian said that many of the software patents already granted are poorly researched and too broad. One such case is the infamous patent awarded to Compton's NewMedia, Inc. in Carlsbad, Calif., which was overturned last year.

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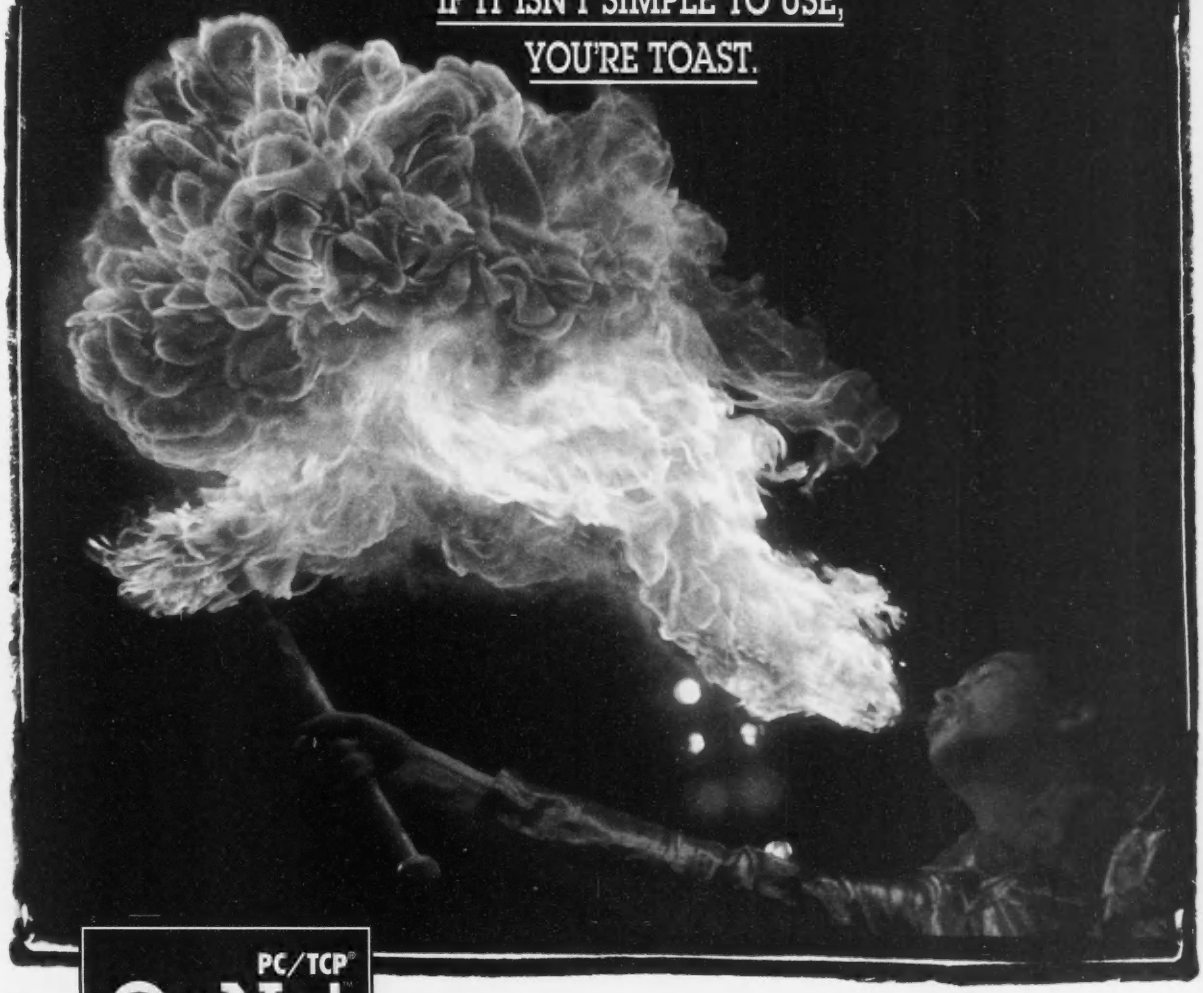

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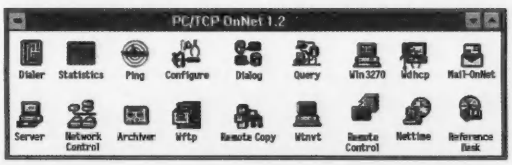

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Alternative storage interfaces outdo SCSI connectivity

SSA, Fibre Channel deliver high performance

By Steve Moore

After a long and useful life, SCSI is about to be shunted into retirement by users who consider it inadequate for connecting high-performance data storage devices to networks.

Even in its recent 40M bit/sec. incarnation, SCSI cannot match the chief new contenders for the storage device interface throne (see chart). Those contenders include IBM's 80M bit/sec. Serial Storage Architecture (SSA) and the 100M bit/sec. Fibre Channel Arbitrated Loop specification, which is advocated by Hewlett-Packard Co., Sun Microsystems, Inc. and others.

HP last week unveiled a Fibre Channel controller chip for connecting hosts and servers to high-performance mass storage devices over distances up to 10 kilometers. IBM already offers SSA chip sets.

"SSA is better positioned to be the device-level interface of choice, and I see Fibre Channel becoming the longer-haul backbone network solution," said Mike Peterson, president of Strategic Research Corp. in Santa Barbara, Calif. Both interfaces are "extremely relevant in client/server environments" in which a central application repository must share data with local and remote clients and also deliver high performance and reliability, he added.

Itching to go

Users are eager to take advantage of the new interfaces, which are expected to become available in a variety of mass storage products in the next year.

Burlington Coat Factory Warehouse Corp. in Lebanon, N.H., expects next year to deploy Sequent Computer Systems, Inc. products that support Fibre Channel, said Michael Prince, MIS director at the nationwide retailer.

Data storage interfaces

Standard	Transfer rate
Ultra SCSI	40M bit/sec.
Serial Storage Architecture	80M bit/sec.
Fibre Channel Arbitrated Loop	100M bit/sec.

A spokeswoman for Sequent in Beaverton, Ore., declined to comment about the company's Fibre Channel implementation plans, however.

"Fibre Channel removes the length restriction associated with SCSI chains and therefore facilitates bigger clusters of servers," Prince explained. Burlington Coat has "hundreds of disks, and there is no way to cluster all our servers together without this technology," he added.

Two for one

In addition, Prince said, the interface will aid Burlington's security and disaster recovery strategies because it will allow mirrored disks to be located in separate buildings a kilometer or more apart.

But some users say neither Fibre Channel nor SSA will meet their storage management needs. "We're looking into disk farm technology so our servers can share data without having to send it through the network," said Hank Hensel, network manager at Publishers Printing Co. in Shepherdsville, Ky.

Publishers Printing currently has more than 450G bytes of data stored onsite and is hoping to triple that in the next eight months, Hensel said. "When you're moving 400M- to 600M-byte files across even a high-bandwidth network, you can saturate yourself pretty quickly," he said.

"Our real problem is that we want a data storage management solution linked to a workflow solution, and since nobody has that right now, we're looking at having it developed by a third party," Hensel said.

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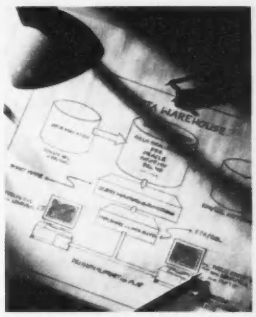

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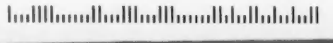

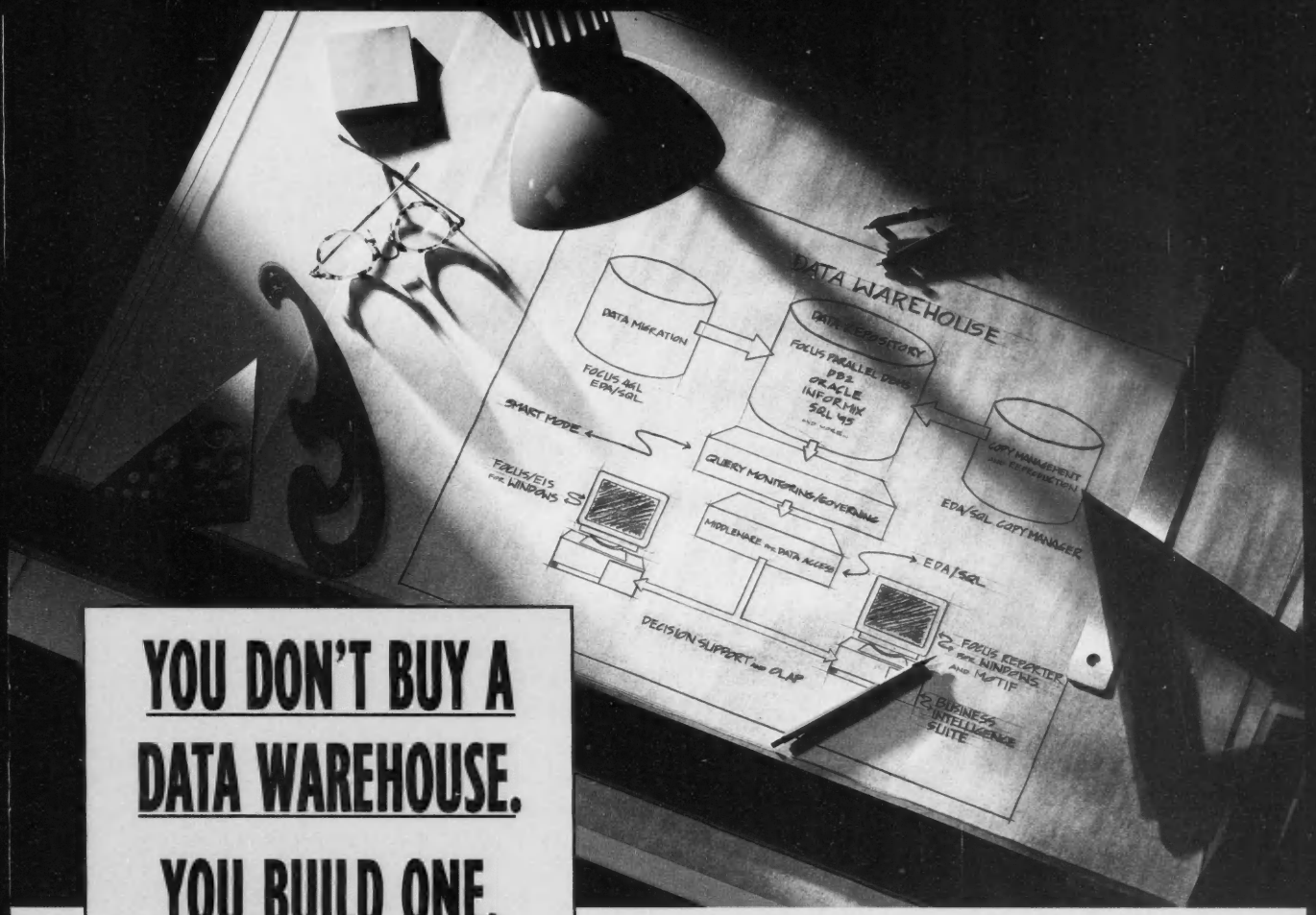

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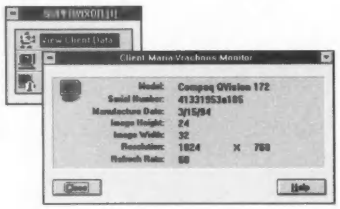

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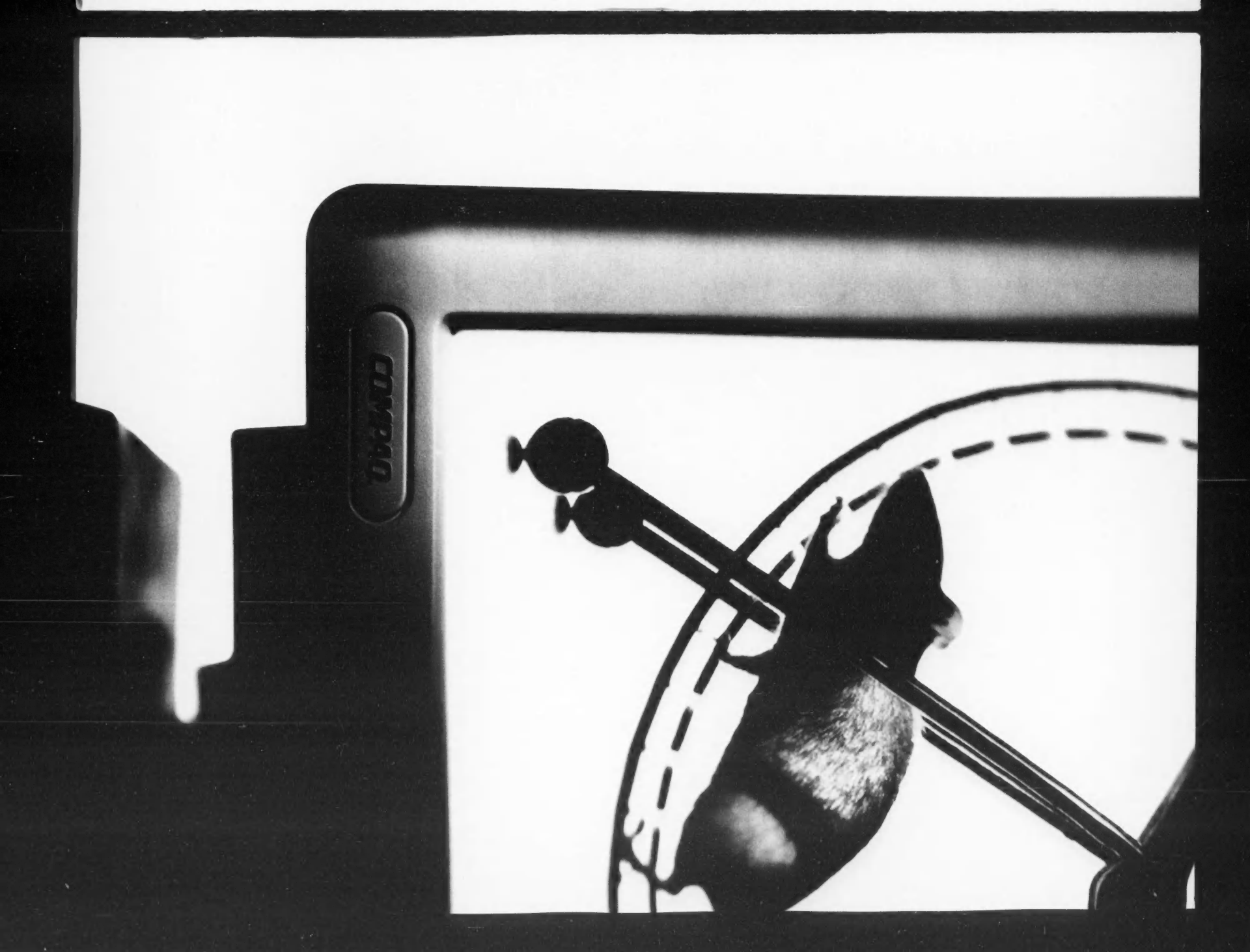

OPEN

European tech issues mirror those of U.S.

By Thomas Hoffman
PARIS

To get a leg up on Bass Taverns Ltd.'s business requirements, information technology director Brian Wilson does not just share pints of stout with the customers — he sweeps up after them.

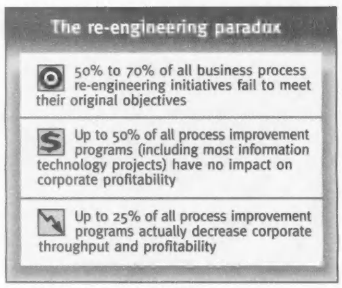
Once a year, Bass Taverns executives in information systems, human resources, marketing and other departments trade in their business attire for aprons at one of the UK-based company's 4,000-plus pubs.

Bass Taverns picked up the idea from one of its systems integrators, Unisys Corp. Unisys consultants and technical staffers tended bar and waited tables at Bass Taverns for the first few weeks of a client/server retail automation project in 1991 to learn the customer's business inside out.

Know your customer

The roll-up-your-sleeves approach at Bass Taverns "has helped the entire company get a feel for the business requirements, and that's been particularly helpful for us in" information technology, said Wilson, one of 300-plus European technology managers who attended a Gartner Group, Inc. conference held here recently on "Managing Business and IT Strategies — Reality or Dream?"

The conference examined both successful and failed techniques that organizations have used to align their technology mission with their corporate objectives.



Source: Gartner Group, Inc., Stamford, Conn.

Although the European managers face a broader range of regulatory issues, they are challenged by most of the same obstacles their American peers encounter. They struggle with the difficulties of justifying technology's value to senior management, balancing the demands of end-user business units and grappling with the pitfalls of re-engineering.

"From what I can see, the gap in [information technology] management issues between the U.S. and Europe has closed dramatically in the past few years," said H. Michael Francissy, director of information services at Rhone-Poulenc Rorer GMBH in Cologne, Germany.

For example, with the help of the IBM Consulting Group, Statoil in Stavanger, Norway, began re-engineering its IS organization two years ago to better meet greater end-user demands. The re-engineering effort flattened Statoil's once hierarchical IS organization, paring 40% of middle management from its 350-person staff. The group has since reorganized its technicians into sets of project teams, according to Per-Bjorn Pedersen, a senior IS staff member at the petroleum giant.

While Statoil's restructuring helped speed the turnaround on IS projects, the technology staffers have responded slowly to the new order. "Some people just aren't team players," Pedersen said. "But we're trying to encourage teamwork with a [financial] incentive structure for team-oriented capabilities."

"There's almost a lemming-like mandate to reinvent. If we don't re-engineer, we'll die," said Chuck White, vice president of Gartner's European Executive Service, in a challenge to the sweeping change management trend.

Just as difficult

The decentralization of information technology has not come any easier for European managers, either. The European Patent Office in The Hague started inserting its 160 IS specialists in its six business units in 1987. Although the effort was expected to help the patent office's business units by providing direct contact with the IS organization, the situation has yielded a variety of problems.

"Our IS people in the field have become isolated from the central IS organization. Plus, there's been a tendency by field staffers to 'become native' with their end users and argue their concerns," said Ciaran J. McGinley, assistant to the principal director of the Search/Patent Examiner at the European Patent Office.

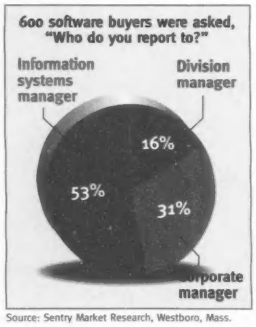
In an attempt to circumvent these problems, the patent office has decided to rotate its IS staffers among business units once every three or four years, but McGinley expressed skepticism about whether that solution will stick.

Software purchases shift to user departments

By Rosemary Cafasso

When it comes to software purchasing, information systems managers are losing control to user departments.

By 1997, half of software spending will be handled outside central IS, according to a survey of 600 software buyers released last week by Sentry Market Research in Westboro, Mass. In 1990, less than 20% of software buying took place outside a centralized IS operation, Sentry reported.



Source: Sentry Market Research, Westboro, Mass.

The message to IS is avoid a power struggle with users and figure out a way to assist them in software purchases, said David Brousell, a Sentry analyst.

One emerging trend at user companies, the survey found, is a "federal/state government" approach in which a central IS group provides "federal" guidelines to govern core technology issues. Individual "states," or departments, are responsible for selecting their own applications and desktop tools.

Yet at least one IS executive said his company is pulling away from distributed software purchasing because it has become too expensive. "We are trying to move the other way to enforce more standards by IS," said Mike Rood, manager of system infrastructure at Autodesk, Inc. in Sausalito, Calif. "Unless you standardize, it can get very expensive."

Rood said end users frequently purchase software that looks good but that is difficult to use, and that translates into additional, unexpected support costs for IS. Brousell said these added costs are "the obvious downside" to the shift in software spending. But he said that overall, the change in purchasing responsibility can be good news.

Upgraded Next tools debut

By Kim S. Nash

Next Computer, Inc. has begun shipping upgrades of several development tools, including a speedier version of a key object-relational data mapping product.

Enterprise Objects Framework 1.1 is designed to let users put relational data in Next's object-oriented environment.

The Redwood City, Calif., vendor also said it has bought all rights to the Objective C programming language for an undisclosed sum from Stepstone Corp. Next wants to submit Objective C specifications to standards bodies in hopes of sparking widespread adoption of the language.

Next's recent product rollout includes the following:

- NextStep Release 3.3 for workstations based on Sun Microsystems, Inc.'s SPARC and Hewlett-Packard Co.'s PA-RISC chips.
- NextStep Developer 3.3, a development kit that includes a compiler for C++. This is a first for Next, a staunch Objective C supporter.
- Enterprise Objects Framework 1.1, a utility to map relational data to an object-oriented structure. It includes adapters for Oracle Corp.'s Oracle7 and Sybase, Inc.'s System 10 databases on various Unix and PC platforms.

Enhancements to Enterprise Objects Framework 1.1 — faster application start-up time and better virtual memory and CPU use — should mean productivity gains for users, said Jonathan Weeks, a technical architect at McCaw Cellular Communications, Inc. in Kirkland, Wash.

McCaw is one of Next's largest customers and has used NextStep to build a massive customer service system on PA-RISC hardware.

For the past several weeks, discussion among Next users on the Internet has focused on feared price hikes for NextStep and related products. However, no price changes were announced last week. NextStep Developer 3.3 costs $4,999, though existing users can upgrade to the product for $1,249. NextStep 3.3 is priced at $799, with $199 upgrades. Enterprise Objects Framework 1.1 is priced at $299, also with $199 upgrades.

Currently, Enterprise Objects Framework 1.1 and a companion product, Portable Distributed Objects (PDO), are available only to users who buy Next's core development products. However, the company may soon sell Enterprise Objects Framework 1.1 and PDO separately, said Steve Jobs, Next's president and chief executive officer.

Enterprise Objects Framework 1.1 and PDO — a layer of Next's operating system designed to let users access objects over a network — would be sold stand-alone with interfaces to object-wanna-be tools such as PowerBuilder from Powersoft, a unit of Sybase, Inc., and Microsoft Corp.'s Visual Basic, Jobs said. However, he said he has not made a final decision about splitting off the products.

Meanwhile, Next has promised to ship NextStep 4.0 this summer. The major upgrade will sport a rebuilt electronic-mail system and the beginnings of an object development system dubbed Mecca. Mecca is now under development at Next.

Senior editor Elizabeth Heichler contributed to this story.

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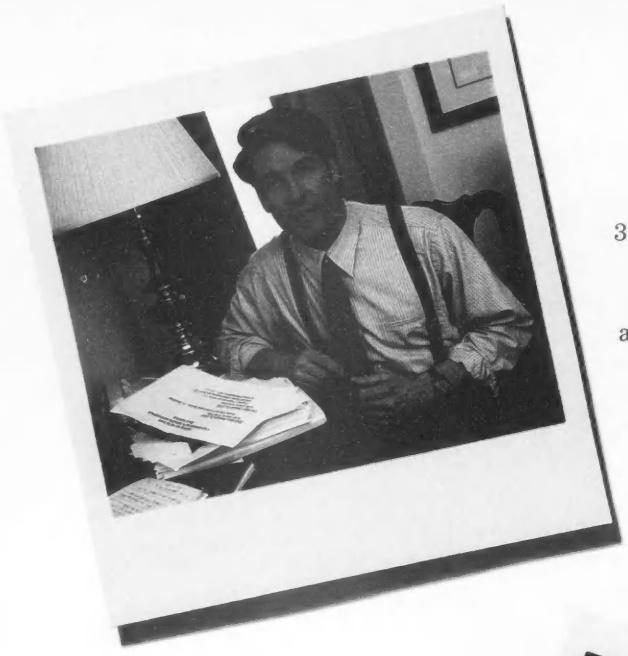

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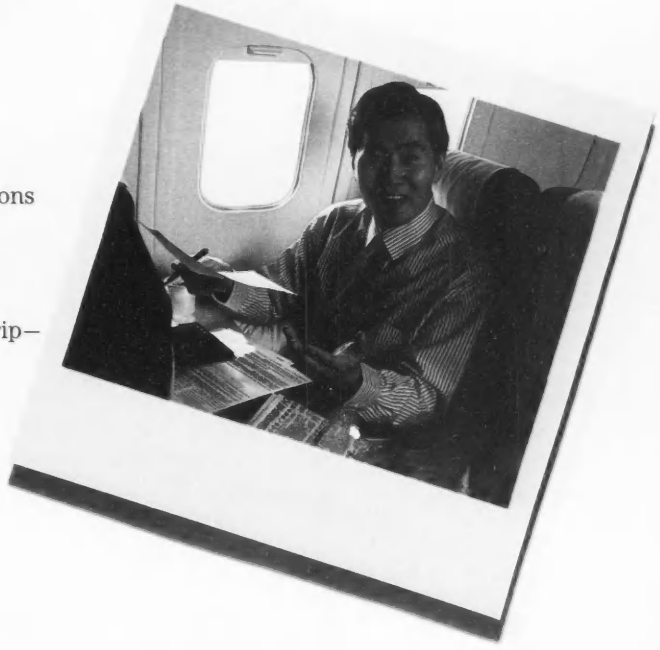

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UNISYS

Free Unix travels to corporate IS

By Neal Weinberg

Linux, a free version of Unix developed in global cooperation across the Internet, may be moving from the dorm room to the boardroom.

During the past four years, developers have been downloading Linux code, improving it and tossing it back onto the Internet. At the same time, young capitalists have been busily figuring out ways to make money on a product that is free in its raw form.

As a result, today there are companies selling CD-ROM versions of Linux; PC-based, fully configured Linux-based workstations; and even the *Linux Journal*. Still, Linux remains essentially the province of highly technical users and college students looking for inexpensive software.

Enter Caldera, Inc., a company funded by former Novell, Inc. Chief Executive Officer Ray Noorda, with a plan to commercialize Linux. The outgrowth of a Linux project that was killed when Robert Frankenberg took Novell's helm, Caldera's plan calls for adding user interfaces, commercial applications and networking features to give businesses an inexpensive Unix-based client on the desktop.

Under development in Linux

- Symmetrical multiprocessing
- Linux on Digital's Alpha, Sun's SPARC and Motorola processors
- Linux on the Mach microkernel
- Many new hardware drivers, utilities and applications

Next month, the Orem, Utah-based start-up expects to release its first product, a Linux-based, 32-bit desktop operating system that features Internet connectivity, said Ransom Love, Caldera's vice president of marketing. The product will be called Caldera Network Desktop for Internet Access.

Mixed reception

Caldera has not impressed the mainstream computer industry. But excitement is mounting within the Linux community. Linus Torvalds, the Finnish graduate student who created the Linux kernel, is enthusiastic. "So far, Caldera looks very positive and I hope it will help, especially in the application department," he said.

Love said Linux was selected because it is small, fast, stable, cheap and has an installed base of roughly 500,000 users.

Skeptics argue that Caldera is Noorda's quixotic attempt to compete with Microsoft Corp. for control of the desktop.

Love downplayed the notion that Caldera is Noorda's attempt to take on Microsoft. "The last thing we want to do is have a big bull's-eye on our chest," he said. Linux will be positioned as an alternative product, he added.

Fighting to get back on track

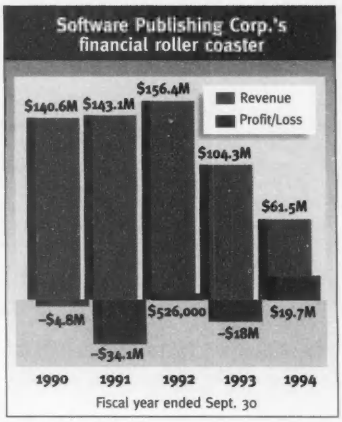
Software Publishing refocuses on desktop graphics with acquisition

By Lisa Picarille

In another move to rebuild by focusing on its strengths in the presentation graphics market, Software Publishing Corp. last week acquired Digital Paper, Inc., a Cupertino, Calif., developer of visual presentation software.

Under the terms of the deal, which was estimated at $5 million, Software Publishing will give Digital Paper $3.5 million in stock and pay as much as $1.5 million in cash. Software Publishing will take a one-time charge of $4.7 million for the quarter, which ended March 31, and will post a loss for that period, officials said.

Digital Paper's products include a low-end presentation package that should complement and supplement the revenue generated by Harvard Graphics, Software Publishing's cash cow. With an installed base of more than 4 million users, Harvard Graphics accounted for more than 85% of Software Publishing's 1994 revenue of $61.5 million, according to Irfan Salim, Software Publishing's president and chief executive.



Salim took the helm of Santa Clara, Calif.-based Software Publishing from the company's founder and CEO, Fred Gibbons, in a shake-up last year. Gibbons remains chairman.

Observers attributed Software Publishing's decline to a series of industry marketing decisions. For example, the suite concept hurt Software Publishing because most of the office bundles include a presentation product at virtually no charge.

The company was also hit hard by a radical erosion in software prices. In fiscal 1994, unit sales of Harvard Graphics grew by 60%, but revenue remained flat. And unsuccessful Software Publishing ventures outside its core presentation graphics area, such as executive information systems and client/server database products, contributed to financial woes, according to Jeffrey Tarter, editor of "Soft Letter," an industry newsletter in Watertown, Mass.

But Salim said he has taken a three-pronged approach to getting the company back on track. The first step, which was taken last year, was to reduce costs and cut back to 240 workers. Salespeople were shifted, however, to help sell Harvard Graphics to large corporations. Research and development costs were cut by incorporating more third-party code base and subcontracting portions of product and technical support.

Phase two focuses on getting more products to market rather than relying on the cyclical revenue stream generated with annual upgrades of Harvard Graphics. During the past six months, Software Publishing has released Harvard Graphics 3.0, Harvard Montage, Harvard ChartXL and Harvard Spotlight.

The third phase mandates an acquisition strategy to acquire tools to complement Harvard Graphics.

Facing loss, Gupta taps new top exec

By Elizabeth Heichler

On the eve of an anticipated first quarter loss, a struggling Gupta Corp. last week sought to minimize the impact by appointing a new president and chief operating officer.

If the predictions are correct, the loss will come on the heels of a $24 million loss in Gupta's last fiscal year. Analysts said the drop was due to marketing expenses that failed to pay off and competition from database application development competitors such as Sybase, Inc.'s Powersoft division.

Sam Inman, who was named president and chief operating officer of the Menlo Park, Calif., company, hopes to turn this around. He most recently held the same positions at PC distributor Ingram Micro.

Gupta Chairman and Chief Executive Officer Umang Gupta denied speculations that Inman was brought in to put the company on the block.

"This company has been built for the long haul, and there are great new opportunities coming up for us when Windows 95 comes out," he said. Some products that are expected to help the company move into the emerging software components market for Microsoft Corp. Windows 95 applications include OLE controls that can be used in database applications. Components that provide functionality for database querying, report writing, connectivity and data moving are expected to ship later this year, Gupta said.

CEO Umang Gupta *denies the company will be sold*

Gupta maintained that Inman's distribution background will help the company move to a more indirect sales model. About 80% of the company's international sales are indirect, and 80% of its U.S. sales last year were direct. Gupta wants its U.S. sales model to more closely resemble its international distribution strategy.

Gupta has been plagued with many missteps. For instance, when Powersoft's PowerBuilder was initially released, Gupta allowed it to gain market share despite having a much more mature tool, said Judith Hurwitz, president of Hurwitz Consulting Group, Inc. in Watertown, Mass. It has also blundered badly with its marketing, spending about $15 million last year to achieve only $17 million in sales, Hurwitz added.

Richard Finkelstein, president of Performance Computing, Inc. in Chicago, said, "It's going to be very hard for them to gain momentum, and I don't see the prospects being good at all."

Gupta's tools were too complicated compared with PowerBuilder, he said. But rather than simplifying the tools, the company continued to add functionality and lost market share.

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Blandin Paper Company

FRANCHISE
Butler Manufacturing Company
Molly Maid, Inc.
Power House Gym, C.A.

GOVERNMENT/ PUBLIC SECTOR
United States Postal Service
Midtown Community Court
San Bernardino County, Information Services Department

HEALTHCARE
Saint Alphonsus Regional Medical Center
Strang Cancer Prevention Center
Columbia Presbyterian Medical Center

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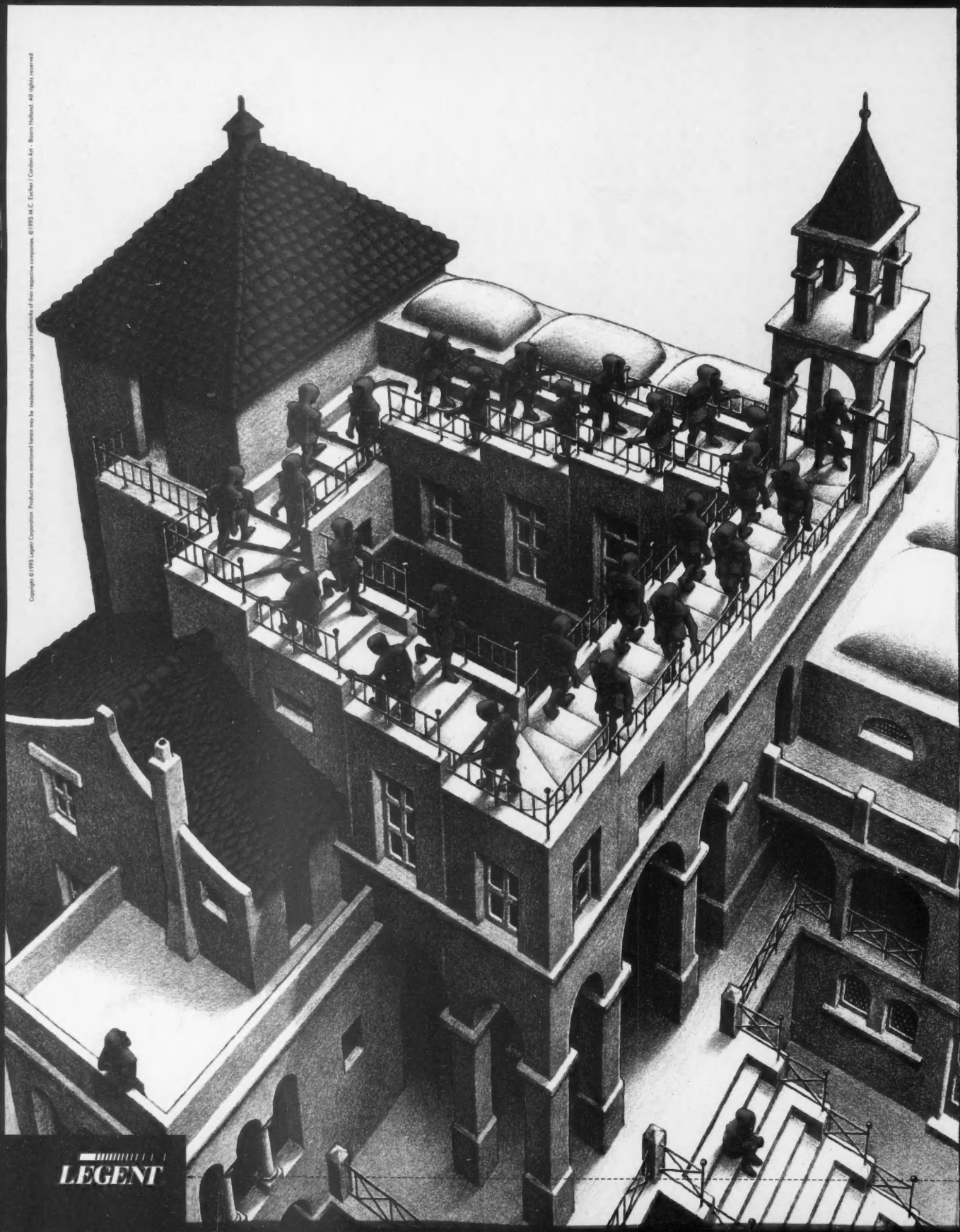

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It's déjà vu. You've been here before.

The hardware is different. The systems are different. But the problems look awfully familiar. Operations management, resource management, storage management, configuration management, application management, problem management. Doesn't some of this stuff go back to Univac II? And yet, here you are at square one, spending way too much time on the most mundane part of your job. If only there was some management software out there that actually helped. Well, actually, there is. At Legent, we've put together the most extensive set of industrial-strength, distributed systems management tools available. We've also developed an open architecture called XPE that, according to some of the toughest analysts in the business, is pretty remarkable. As a result, our software works together across almost anything you can wire together, regardless of function or platform, from mainframes to UNIX servers to PC LANs. Which means you can manage your systems from the platform of your choice, something our customers tell us has definitely made their lives easier. Think of it: systems management tools that really work. It's déjà vu all over again.

For a faxed white paper detailing Legent's distributed systems management strategy, call 1 800 676-5468 x 2505.

Political setback

It has been a long time since a new mainframe in the classical water-cooled mold made front page news in *Computerworld*.

But last week Hitachi introduced a giant machine — one that has a footprint the size of a 100-sq.-ft. cubicle in your office. It is a machine that stands as a stark reminder of just how far the era of distributed, microprocessor-based computing has come. Or more specifically, how far it still has to go.

The machine is no fluke, like some multi-GFLOP supercomputer hoping for four or five customers in the world. To the contrary, analysts predict that Hitachi will sell upward of 400 of these modern-day relics. Unlike most PC hardware makers, Hitachi will earn substantial profits selling these units.

Who would be so crazy to buy such an albatross? What fool of a CEO would approve the check? Why won't these things just go away, let alone be recast in new and improved models?

The answer, in part, to these questions was found on the same front page of *Computerworld* in an adjacent story. In that piece, we reported that the continuing underperformance of major client/server initiatives is spawning a spirited and at times vicious game of finger-pointing.

This destructive pastime is being spurred in part by aggressive vendors that sneak around IS management and pitch their products directly to end users. You probably know which vendors these are. They are the ones you *didn't* place on your short list.

Your job is to ensure that the end-user tools work optimally with your large system database products and with the network. Apparently some vendors really don't care about your existing infrastructure.

What's this got to do with a $20 million megalith?

Simply put, the continuing chaos fostered both by incompatible client/server products and, at times, client/server vendors with hyperactive sales glands is making the stodgy, relatively inflexible and sometimes dictatorial mainframe environment look quite attractive. Stripped of all else, that environment is orderly and predictable.

This is not to say that mainframes don't do certain jobs far more efficiently than any other hardware choice. In many applications, their I/O capacity, built-in security and unmatched capabilities in batch jobs have no peer. As one IS director said — almost with an air of resignation — in a tape I viewed recently, "The mainframe is going to be with us for a long time."

When you read about the coming generation of 120 MIPS-plus microprocessors available for hundreds instead of thousands or tens of thousands of dollars, you can envision a virtual computing environment nearly free of dinosaurs.

It would be a shame, however, if mainframes or any other "sunset" technology were around a day longer than need be because of political rather than pure technological considerations.

Bill Laberis

Bill Laberis
Internet: *blaberis@cw.com*

Microsoft knows

Bill Laberis seriously underestimates Bill Gates and Microsoft's plans for Windows 95 [CW, April 3]. Microsoft doesn't put out 400,000 beta copies and then find "significant problems" this late in the game. The reports of these bugs sound overstated.

Microsoft knows that only built-in, full Internet/World-Wide Web access is going to be enough to motivate people to upgrade both hardware and software to the levels required for decent Windows 95 operation.

Microsoft is probably struggling with the best way to implement that access and deciding if it's worth a delay to do it. Gates knows what the killer app is for the rest of this decade, and he's not going to release a fat, slow product without hitching it to the fastest thoroughbred in town — the Web.

Wade H. Nelson
Durango, Colo.

A common thread

There is an interesting symmetry in the Viewpoint piece "The burden of IS's dysfunctional staffers" [CW, March 20] by Thornton A. May of Cambridge Technology Partners. Dysfunctional types 2 and 4 ("Noise makers" and "Nomads") seem to have been included mainly to obscure a common thread that ties together types 1, 3 and 5 ("Ankle biters," "Groupies" and "Turfwonks"): a possible reluctance to advocate the services of Cambridge Technology Partners.

Larry R. Kostecke
Goodrich, Mich.

Still waiting for Windows 95

In answer to item 22 of your March 27 editorial ("Thinking of a line that rhymes with 'Please look after my quetzlcoatl' "), I submit this:

1. While I anticipate Win 95 from Seattle;
2. While I rest from my Win 3.11 battle;
3. As I ride out of Denver, still tall in the saddle;
4. While the anti-Gates media herds up like cattle.

Didn't take long. . . . Are we there yet?

Andy Blackstone
Contact Systems, Inc.
Denver

Interaction is show highlight

As a speaker at the GroupWare '95 conference, I was interested in Elisabeth Horwitt's assessment [CW, April 3]. Reducing travel and increasing speaker availability through technology are excellent goals for a collaborative technology conference. However, many beneficial aspects would be lost, such as the hands-on demonstrations in the exhibit hall and the casual encounters with speakers and attendees.

In fact, for me, the conference highlights were some of the hallway conversations. The Internet can do a lot, but it can't replicate these experiences that make a conference an interesting and valuable experience.

Lisa Neal
Lexington, Mass.

No thanks to hackers

In his comments in "Letters to the Editor" [CW, April 3] regarding "Hackerama," Ardy Hagen writes "... the cost of these attacks seems almost a fair trade-off for the service — yes, service — they provide." Get real. Tell that to the corporate IS manager spending thousands on security measures to prevent hack attacks. Are we to thank the car thieves of the world for providing us with a thriving car alarm industry?

Hagen has forgotten about a concept called "opportunity cost." The money that companies spend on security measures against hackers may as well be thrown in the trash because it is not a value-added expenditure. It's like paying the bully some of your lunch money every day so he doesn't beat you up.

Dustin Davis
Austin, Texas

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23. Dir./Mgr. Sys. Development, Sys. Architecture
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DEPARTMENTAL MANAGEMENT
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(b) Netware (f) Windows NT
(c) OS/2 (g) Windows
(d) Unix (h) NeXTstep
App. Development Products ❑ Yes ❑ No
Networking Products ❑ Yes ❑ No

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60. Government - State/Federal/Local
65. Communications Systems/Public Utilities/ Transportation
70. Mining/Construction/Petroleum/Refining/Agric.
80. Manufacturer of Computers, Computer-Related Systems or Peripherals
85. Systems Integrators, VARs, Computer Service Bureaus, Software Planning & Consulting Services
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31. Programming Management, Software Developers
41. Engineering, Scientific, R&D, Tech. Management
60. Sys. Integrators/VARs/Consulting Management
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(a) Solaris (e) Mac OS
(b) Netware (f) Windows NT
(c) OS/2 (g) Windows
(d) Unix (h) NeXTstep
App. Development Products ❑ Yes ❑ No
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Microsoft's troubles will fade away

Frederic G. Withington

Microsoft's antitrust troubles are eerily similar to those of IBM a generation ago.

Microsoft is accused of announcing vaporware; IBM was accused of announcing phantom products. Both were accused of misusing monopoly pricing power, hiding the specifications of interfaces among products and unfair "bundling" of free features and services with products.

The parallel is almost perfect. So maybe the outcome will be, too.

First of all, the IBM case dragged on for 12 years. So don't expect any final resolution of the Microsoft antitrust trouble soon. For every proposed settlement, expect new intervenors, new congressmen proposing punitive legislation and new claims by multiple regulators that Microsoft falls within their jurisdiction.

More important, the issues will go away.

Did IBM do bad things? Probably, but it now does them openly, and nobody complains anymore.

Did IBM monopolize the industry? I think not, but its present monopoly power is much greater than it was in the 1970s, and nobody cares anymore. I base this assertion on the fact that IBM was accused of monopolizing the "general-purpose computer industry," and the general-purpose computer was defined as a mainframe hardware complex with a multifunctional operation system. IBM is now the only provider of mainframe operating systems and computers except for makers of clones and niche-oriented machines. At the time of its trial, it still had vigorous competitors.

The growth came elsewhere as the mainframe market shrank into an ossified (but still profitable) niche, and no one seems to mind anything IBM does within that niche.

Microsoft will remain dominant in its backyard and continue most or all of the practices being complained about.

Now, what about Microsoft? The only thing it really dominates is the market for PC operating systems. Of course, it competes vigorously for network and server operating systems, but in both areas, others were there first and are still effective competitors. Microsoft is not able to set the standards, as it did with PCs. Microsoft also competes vigorously with applications but usually on a "me-too" basis, buying successful vendors or creating applications after others have explored the market.

The future belongs to objects, digital imaging, wideband interaction and the Internet. Microsoft is addressing all of these, but again, others were there first and a host of giant competitors are almost as advanced.

Microsoft, like IBM, must service its niche. DOS applications must be supported on all future Microsoft products, just as MVS applications had to be supported on IBM's. For IBM, this requirement proved a drag on its freedom to innovate and even on its management mentality. Microsoft will deny that it could happen there, but who knows?

I'll bet that Microsoft's antitrust history will parallel that of IBM. Microsoft will remain dominant in its backyard and continue most or all of the practices being complained about. But after a while, complaints will stop because the action has moved elsewhere. Microsoft's power, and its antitrust problems, will have faded away together.

Withington, a New York-based consultant and writer, was an expert witness in the IBM antitrust trial.

The time is now for the interactive enterprise

Patricia B. Seybold

There's something profound on the information technology landscape. It's not the convergence of computers and communications. It's not the information superhighway. It's not even the effect of "being digital," as MIT's Nicholas Negroponte would have us believe.

Although all of these trends play a supporting role, the most profound transformation taking place today has to do with customers' abilities to interact with the information, products and services they need.

If you're not already designing customer-interactive information systems, it's time to start.

Companies all over the world are restructuring their customer service operations and their internal information flows so that customers can easily interact with the information they want. The benefits of this approach are legion: reduced costs, higher service quality and much richer and cleaner data and information flowing through the business.

However, the downside is immense. Clogged information arteries lead to constricted information flow, which damages important relationships and slows the organization's ability to respond to changing conditions.

Let's look at some examples of how customer service can be restructured. In San Antonio, Alamo Community College students retrieve their test grades electronically. Waiting and paper are not required. They find out how they did in the privacy of their homes, or at a library kiosk. In Ohio, people applying for unemployment benefits can check the status of their claims at a kiosk and peruse a local job bank at the same time. As the customer of just about any bank in the developed world, you can call up and check your balance, transfer funds from one account to another and make investments without leaving your armchair or even talking to a person. Lots of organizations now allow customers to help themselves interactively.

Businesses routinely provide interactive information to their business customers as well. At the Detroit law firm Plunkett & Cooney, clients can call up the files their lawyers are working on, review the work in progress, scan the depositions and check out their billings. They can ask questions, make suggestions and feel in control of the work that's being done on their behalf.

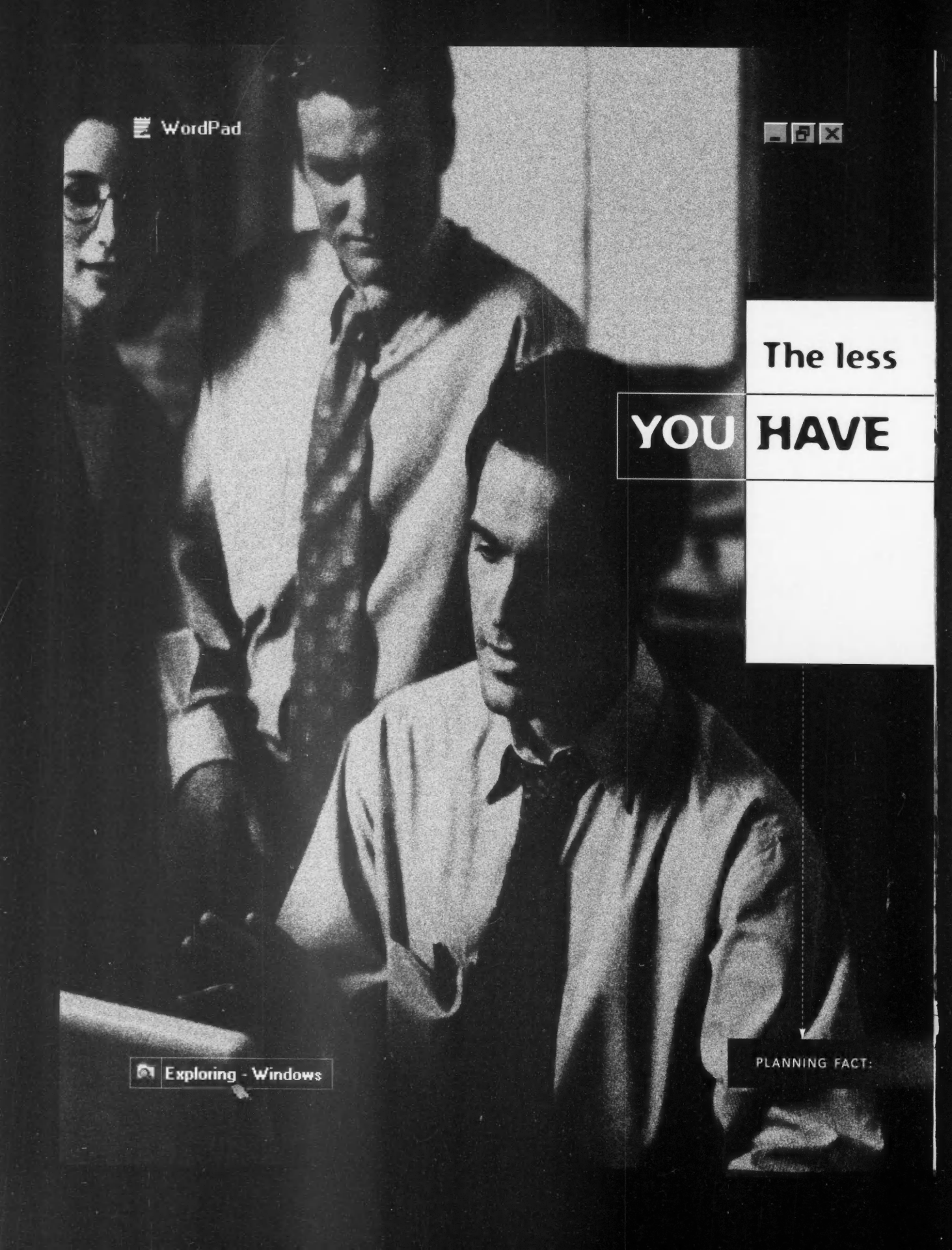
Insurance brokers Johnson & Higgins in New York link their business customers directly to an on-line marketplace where they can shop to optimize coverage and spread the risk across insurance carriers.

Why is this shift toward customer self-service and interactivity so significant? Because when you provide customers with a direct pipeline that allows those customers to interact directly with "your" information, you also gain the impetus and the opportunity to streamline your internal, cross-departmental information flows. New business processes spring into place, designed by the people who know all their permutations and ramifications.

As your customers interact with the information, making their choices and asking questions, your business benefits. You forge closer relationships with your customers and learn how they make decisions and trade-offs.

If you're not already doing it, it's time to start designing customer-interactive information systems for your business. If you don't, your business is at risk.

Seybold is president of Patricia Seybold Group in Boston. Her Notes address is Patricia Seybold@Notes. Her Internet address is pseybold@psgroup.com.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The system helps users help themselves. It's more intuitive. It's easier to use. It has built-in networking. And it's more reliable. With Windows 95 you stay ahead of the curve. How did you get along without it?

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Easier Network Integration

The Microsoft® Windows® 95 operating system lets you spend less time worrying about network integration issues. Right out of the box, Windows 95 supports all major networking protocols. It includes full 32-bit, protected-mode versions of TCP/IP, IPX/SPX, and NetBEUI, and full Novell® NetWare® and Windows NT™-based clients. With vendor-supplied additions it supports Banyan® VINES,® DEC® PATHWORKS,™ SUN® NFS and more. Your network clients are faster, more reliable, and use no conventional memory. Backup agents for most popular server-based backup systems are built-in. Windows 95 also lets you run your management and configuration tools remotely. Much of the troubleshooting you've done in person can now be done over the network.

Greater System Reliability

Windows 95 can reduce downtime and support calls through better use of the system's resources. It isn't a layer on top of MS-DOS.® It is a complete operating system with 32-bit, protected-mode subsystems to keep your PCs running. So there's little chance of Out of Memory messages and your existing Windows-based applications can be run more reliably. The new Win32®-based applications offer an even greater level of reliability with separate memory address areas and separate message queues to prevent them from interfering with each other.

Simplified User Interface

Windows 95 makes navigating the system easier for every user. There are fewer concepts to learn, a more consistent, more intuitive layout and improved, unified, on-line help. Users find answers to their questions without having to call you. With long file name support, users can find files more easily. The Start button offers a single, streamlined point of access for nearly everything they want to do. A taskbar is always visible so switching applications is a snap.

For a Closer Look

Look no further than WinNews. It's the on-line, electronic newsletter that updates you with the very latest information on everything you need to know about making the move to Windows 95. To subscribe e-mail us at enews9@microsoft.nwnet.com with only the words **Subscribe WinNews** in the text of your message.

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A LOT OF COMPANIES

THAT CAN PUT YOU

ON THE INTERNET.

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Electronic documents

Users find success on-line

By Lisa Picarille

■ Users looking to distribute, archive and exchange documents now have a growing number of products to help them accomplish those tasks.

Examples of the emerging products include portable document exchange programs such as WordPerfect's Envoy 1.0, Adobe Systems, Inc.'s Acrobat 2.0, No Hands Software, Inc.'s Common Ground 2.0 and Farallon Computing, Inc.'s Replica 1.01.

Some users have had positive experiences implementing the document exchange applications, while others recommend a wait-and-see approach until vendors place more document readers on the market.

All of the document exchange products have both creation and reader portions. This enables users to create documents that can be distributed electronically and viewed by others, regardless of what application the document was originally created in. All of these products offer Windows and Macintosh versions; Adobe also has DOS and Unix versions.

The beauty of electronic documents is that they retain their original formatting — complete with graphics, fonts and layout — so they look exactly like the original document. Once documents are distributed, users cannot edit or alter them, but the documents can be marked up, annotated and printed out.

Sales solution

Seana Gallagher, product manager of Business Network Acrobat at GE Information Services in Rockville, Md., said her company is using Acrobat to solve communication problems with its worldwide sales force.

"We used to post product profiles, sales forecasts, newsletters and product literature up on our internal database in ASCII or Mac Word format," Gallagher said. "But it was cumbersome for field reps to take it down and redo it. Now it appears to them just as it did in the original."

First pegged by analysts as tools for electronic publishing, portable documents now have much broader appeal. They are being used for archiving and distributing documents as well as printing documents on demand, according to Mark Walter, senior editor of the "Seybold Report on Desktop Publishing," a newsletter in Media, Pa.

Jennifer Mitchell, principal analyst for the Digital Document Service at Dataquest, Inc. in San Jose, Calif., estimated 1993 revenue for digital document software, including tools for management, creation and delivery, at $1.93 billion, rising to $2.6 billion by 1998. She said the delivery component of the equation, with products such as Acrobat, Envoy, Replica and Common Ground, is growing by 19% annually.

However, document exchange vendors face increasing pressure from other products — on-line books, CD-ROM authoring tools, multimedia applications and groupware products such as Notes

Documents, *page 49*

Document exchange programs

Company	Product	Platform
WordPerfect	Envoy 1.0	Windows, Macintosh
Adobe Systems	Acrobat 2.0	Windows, Macintosh, DOS and Unix
No Hands Software	Common Ground 2.0	Macintosh
Farallon Computing	Replica	Windows, Macintosh

Commentary

Stuart J. Johnston

Industry not off the hook

The proliferation of personal digital technologies has led to some unintended side effects and, recently, that has drawn me to ask, Who is responsible for misinformation in the information age?

I am talking specifically about wrong numbers. And the answer, of course, is that we all are.

For example, I have two telephone lines: my home phone and the voice line for *Computerworld*'s Northwest bureau.

My home phone number is similar to that of a Seattle-area school. So if you transpose two digits, my home phone rings. This usually occurs early in the morning, when it snows or when the teachers or bus drivers go on strike.

But I also get telemarketing calls for the person who had my home number before me, eight years ago. And six years ago, a computer consultant printed my home phone instead of her office number on her business card, so my phone occasionally rings with someone who needs a bug fix. Another local firm, which published a Puget Sound business directory on disk in 1989, listed my home phone as the Small Business Support Network. I still get calls.

And there used to be a small chain of PC stores in the area whose name included the word Computerworld. Last summer, it went out of business. Brrrrrrring!

Before Christmas, a third to half of all calls to my office phone were people with fried hard disks or people looking for toner cartridges or games. One guy was totally freaked because he was afraid the PC he'd bought for his wife might have the dreaded Pentium chip bug. It was a 486.

In mid-December, I called the phone company, and they

Johnston, *page 49*

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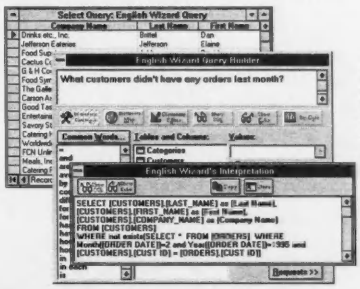

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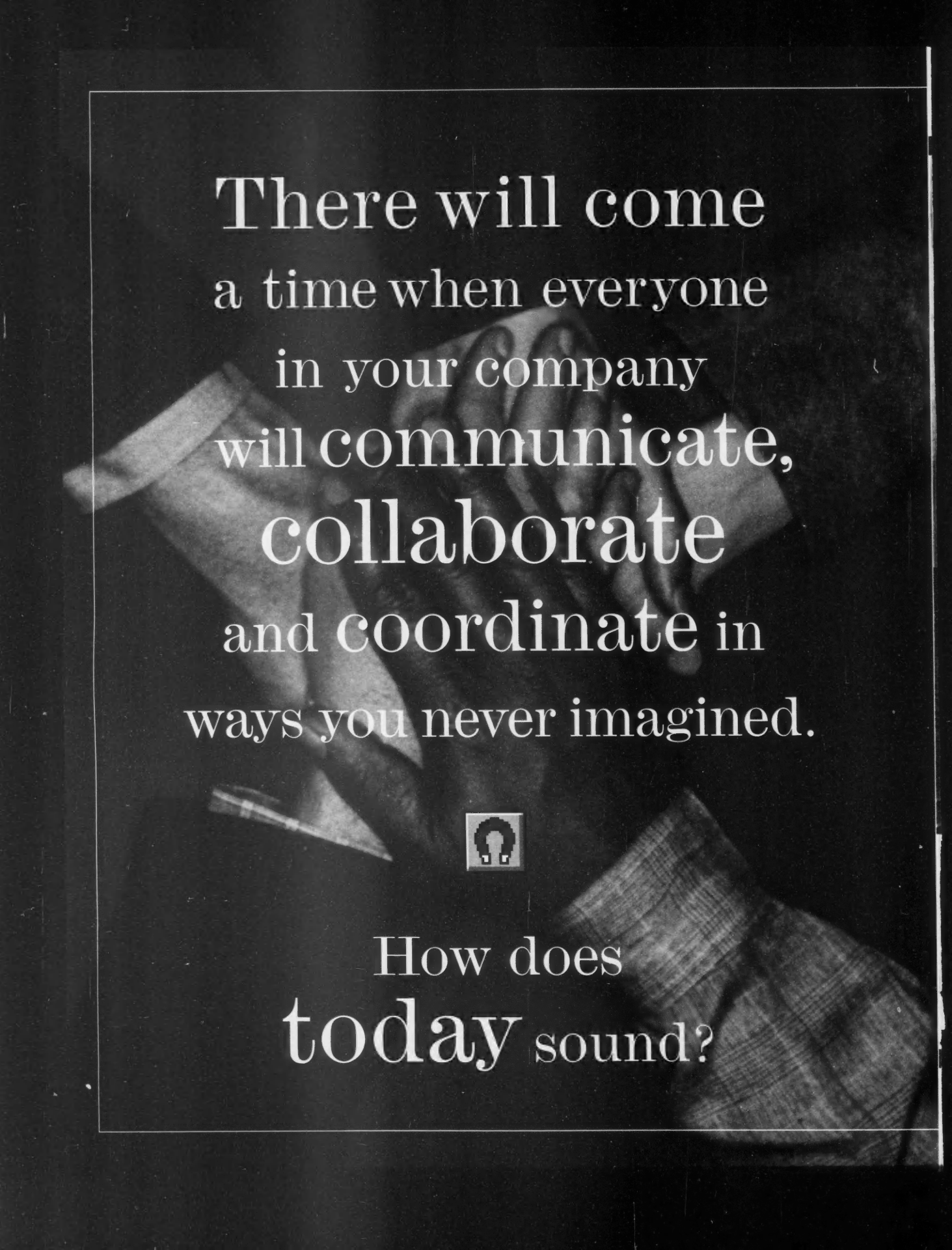
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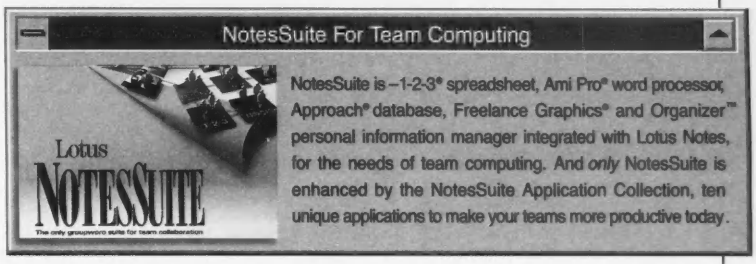

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Users advocate add-on software

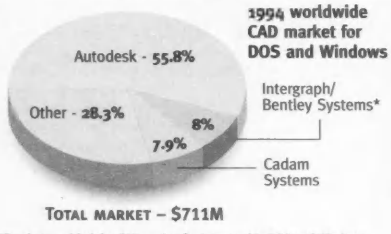
By William Brandel

Autodesk, Inc. in San Rafael, Calif., and Bentley Systems, Inc. in Exton, Pa., are embracing new strategies that will enable users to run add-on vertical market software applications on these vendors' software engines.

By adopting these add-on software frameworks, Autodesk, which has the largest share of the PC computer-aided design (CAD) software market, and Bentley, which holds a distant No. 2 position in the market, are moving PC-based CAD software in the same direction as general personal productivity.

The notion of deploying add-on applets to run on a software engine has already been embraced by major software vendors such as Microsoft Corp., Lotus Development Corp. and WordPerfect, the Novell, Inc. Applications Group. These vendors have developed strategies that will enable third-party vendors to build applets that can run on top of their application suites. For example, Microsoft offers its Office-Compatible program to enable users to run appplets and still take advantage of a common executable, menu structures and commands. PC-based CAD vendors will try to emulate such strategies.

"It is the next logical step for each of these vendors, said Carleton Howk, editor of the "A-E-C Automation Newsletter" in Atlanta.



Source: Daratech, Inc., Cambridge, Mass.

Last week, Autodesk and Bentley announced their respective strategies for enabling third-party vendors to embed components, or applets, into their CAD engines.

Industry specific

Another argument for component architectures is that the third-party vendor can focus on features that address its specific industry instead of being bogged down with base software execution. Users would be able to tap into applets that are specific to their industry.

For example, vendors with software that provides CAD-based cemetery planning on AutoCAD will now be recruited to change their applications to applets, an Autodesk spokeswoman said.

These strategies offer users a number of benefits. For one thing, they will not have to develop and support as many applications as they do now. CAD software users said they are enthusiastic about the prospects for component-based CAD.

"If they would have done this a couple of years ago, we would have taken a completely different direction with our CAD strategy," said Alan Jenkevice, project consultant at Ericsson Communications, Inc. in Montreal. As it stands, Ericsson had to build its own full-blown database application to render the physical layout of cellular networks.

While the strategies of Autodesk and Bentley sound good, it will be a while before users can take advantage of these plans, said David Burdick, an analyst at Gartner Group, Inc., a Stamford, Conn.-based consultancy. This really will not be an implementable strategy until 1997," Burdick said.

Van service books client/server

By Stuart J. Johnston
SEATTLE

Your trip to Seattle is nearly over. You've concluded your business and had your last cup of espresso and checked out of the hotel. All that remains is to catch the shuttle van to the airport and fly home.

In what is sometimes still called the Jet City, a van ride to the airport is just about the last thing you might expect as having a high-tech component.

Two years ago, you would have been correct, but not today. Back then, the vans servicing customers of Seattle's ShuttleExpress were booked and dispatched using an entirely manual, paper-based system. Vans were tracked using a chalkboard and magnets to show each van's location on its route.

"Sometimes the magnet [designating a particular van] got moved, and they missed the pickup so [ShuttleExpress] would have to call a cab" at its own expense to take the customer to the airport, said Fred Taucher, chairman and chief executive officer of Corporate Computer, Inc.

Total revamp

The Seattle-based custom software company replaced the chalkboard system with a client/server system built on a network of PCs running Microsoft Corp.'s Access 2.0 database on the front end and Microsoft SQL Server 4.21 on the back end. The underlying network uses Windows NT with Windows for Workgroups clients.

For ShuttleExpress, which was founded in 1987, computerizing its reservations and van dispatch system went extremely smoothly, according to company officials.

One of the secrets to the system's successful development and deployment process was that ShuttleExpress involved people who would have to use the system, said John Bartanen, one of the company's dispatchers.

"I find it easy to use, and we can carry at least twice as many people today as under the paper system," said Bartanen, who had no previous computer experience when the project started.

"Everybody had an opportunity to get their input into it," said John Hagen, manager of ShuttleExpress' guest support center.

Since the system became operational, the company has handled more than 695,000 reservations. On average, about 1,500 passengers travel to and from the airport daily in ShuttleExpress vans, which number approximately 75.

"Routing [the vans] used to take eight hours, [but] now it's down to three hours, and where it used to take three dispatchers, now it's down to two in the morning and one in the afternoon," Hagen said.

"The stress factor went down, too," said Don Wiedrich, ShuttleExpress' chief financial officer. Stress levels can occasionally get very high such as when college basketball's Final Four tournament was held here earlier this month and 50,000 people attended the games.

Easy to find

"[Before], every reservation was filed alphabetically so when they'd get a call for a change or a reconfirmation, the [reservations] agent would have to put the customer on hold and go pull the file — if it was correctly filed," said Tom McBride, the Corporate Computer programmer analyst who did much of the work. "They can have the phones open a lot more now" so that customers can get through easier.

The reservations side of the system uses 12 NEC Corp. 25-MHz 486-based PCs networked to a single-processor Digital Equipment Corp. 150-MHz Alpha AXP-based server that has 128M bytes of RAM and four 1.2G-byte hard disks. There are four more NEC 25-MHz 486 PCs for the dispatch systems that can also double as reservation systems when it gets exceptionally busy.

When the system was put in, there were some problems with the server slowing down under heavy loading. So the company replaced the original server — a Compaq Computer Corp. 66-MHz 486-based system — with the fast Alpha-based RISC machine. The problems vanished, Hagen said.

McBride said the company chose Access because of its development time and flexibility. "It was quicker to do than in [Microsoft] Visual Basic [because] you can create a form and quickly change it if you're off base."

Most of the system was finished in about six months, ShuttleExpress officials said.

The company opted for custom software running on a PC network rather than a minicomputer. "We went and looked at a dispatch system on an IBM AS/400, [but] it would have cost us twice as much and was also proprietary and a lot less flexible," Wiedrich said. Additionally, the PCs can be used for other tasks, such as running Microsoft Word and Excel.

ON SITE

ShuttleExpress
Seattle

Challenge: To handle the burgeoning number of travelers to Seattle/Tacoma International Airport.

Strategy: Replaced its all-manual reservation/dispatch system with a PC-based client/server system.

Results: Doubled the number of reservations.

Call of duty

ShuttleExpress offers two types of van service: regularly scheduled service to and from the area's major hotels or door-to-door service wherein a van picks up the customer at home, or at another location, and takes him to the airport. Customers can also get both types of service from Seattle/Tacoma International Airport.

When the customer calls the reservations number, an agent enters all of the relevant information, including a customer's pickup location, his destination and any special instructions.

The reservations portion of the system calculates fares based on location and generates a reservation confirmation number. Many common pickup points are preprogrammed into the database along with directions for drivers.

The dispatchers then take the reservations data and assign them to "trips," which consist of a set of pickups for a particular van during a specific time period. Each customer is given a half-hour "window" of time during which his pickup is guaranteed, typically 45 minutes before his flight is scheduled to depart.

Once trips are scheduled, they are dispatched to each van. The Access database is set up to automatically dial out to drivers' alphanumeric pagers and give them all of the particulars for each customer on the trip.

—Stuart J. Johnston

Management in Miami needs access to detail data.

Engineering in Edinburgh needs NT support.

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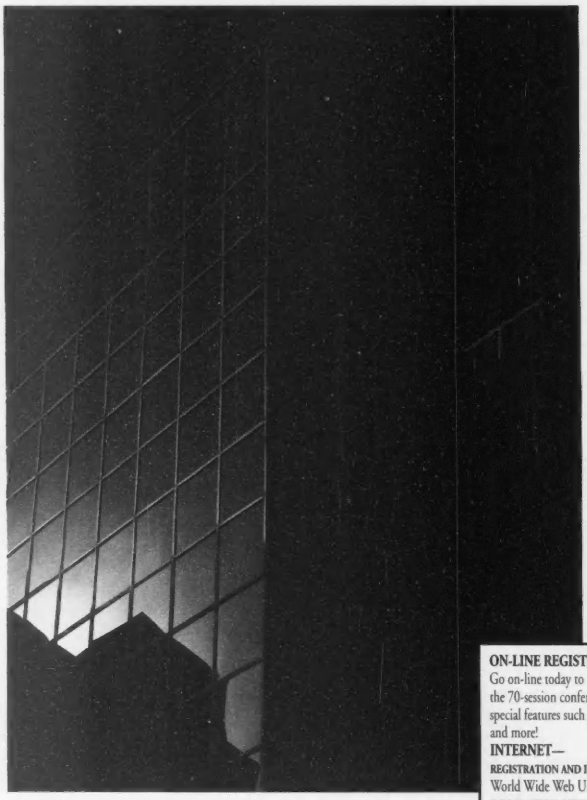

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Documents

CONTINUED FROM PAGE 41

— that include subsets of what users get with document delivery and exchange applications.

Jeffrey Tarter, editor of the "Soft Letter," an industry newsletter in Watertown, Mass., claimed that "the products that distribute the most readers [or viewers] will emerge as the winner."

Let's make a deal

In an attempt to get a leg up on the competition and broaden their distribution, developers have been inking deals with other companies. For example, Adobe recently signed agreements with IBM that will soon have Acrobat preloaded on most of IBM's desktop computers. Adobe also has a nonexclusive agreement with Netscape Communications Corp., whereby the Internet service provider will bundle Acrobat with its Netscape World-Wide Web browser.

Meanwhile, WordPerfect is leveraging parent company Novell, Inc.'s huge installed base of NetWare users and will bundle the reader portion of its Envoy product with a future version of the network operating system. WordPerfect's Office suite also includes an Envoy reader.

Like other industry watchers, Walter claimed there will be no single standard for document distribution. Most observers agree, however, that Acrobat and Envoy are among those with the best chance of establishing themselves as a de facto standard for electronic publishing and distribution.

"Adobe has made so much effort to make its PDF file format open," Walter said. "It's documented and available. If you're a user who has bet your business on it, at least it's documented, and you could write your own viewer if Adobe decided to drop Acrobat. I think that gives users a certain level of comfort about using the product."

Tough sell for some

However, some users said that while such document exchange products can increase information sharing in companies that use a variety of different applications, it can be difficult to get decentralized businesses to even agree to purchase such solutions.

"The products mirror the organization," said Mark Hagen, lead microcomputer consultant for the Administrative Computing group at Boston University's Information Services Division. "If the organization has no corporate standards and is not into sharing, overall unity and homogeneity, then products like this won't get much support or funding."

New Products

TouchStone Software Corp. has announced FastMove, file transfer software.

According to the Huntington Beach, Calif., company, FastMove displays the files that need to be updated and lets users select the ones to exchange. It also previews these files first.

A filtering option automatically chooses the files a user wants, and a virus scanner checks each file continuously as it is transferred.

FastMove costs $49.

▶ *TouchStone Software*
(714) 969-7746

Ositech Communications, Inc. has announced V.34 Jack of Diamonds, a multifunction PC card.

According to the Guelph, Ontario, company, V.34 Jack of Diamonds combines an Ethernet adapter and a cellular data/fax modem in a single Type II PC card.

The card provides up to 28.8K bit/sec. rates. It ships with DOS, Unix and Microsoft Corp. Windows and Windows NT drivers.

V.34 Jack of Diamonds costs $749.

▶ *Ositech Communications*
(519) 836-8063

MicroNet Technology, Inc. has announced the Master CD Pro compact disc recording system.

According to the Irvine, Calif., company, Master CD Pro records at four times the speed of standard recorders, taking 19 minutes to record a 650M-byte disc.

The system was designed for backup, archiving and software and database distribution. It comes bundled with Corel Systems Corp.'s CD Creator CD-ROM Pro 2.5 recording software.

Master CD Pro costs $4,995.

▶ *MicroNet Technology*
(714) 453-6100

BBN Software Products Corp. has announced Cornerstone for Windows, data analysis software for engineers and technical professionals.

According to the Cambridge, Mass., company, Cornerstone uses interactive graphics to let users analyze data and visualize relationships through a variety of graphs and plots. Data links let users test data correlations across tabular and graphical views of data. It also provides access to data dispersed across a client/server network.

Pricing for Cornerstone for Windows starts at $995 per seat.

▶ *BBN Software Products*
(617) 873-5000

DeltaPoint, Inc. recently introduced DeltaGraph Pro 3.5 for Windows, charting and graphing software.

According to the Monterey, Calif., company, DeltaGraph Pro 3.5 reproduces charts and graphs at high, graphics-quality resolution. It works in conjunction with most spreadsheet programs.

Designed for business, technical, scientific and education fields, DeltaGraph features 63 chart types and 200 chart styles. It also includes an automated chart-formatting custom library.

DeltaGraph is cross-platform compatible, allowing chart templates and layouts to be shared between Windows and Macintosh systems.

DeltaGraph 3.5 costs $195.

▶ *DeltaPoint*
(408) 648-4000

Micro 2000, Inc. has announced Micro-Scope 6.0, operating-system-independent PC diagnostic software.

According to the Glendale, Calif., company, Micro-Scope 6.0 reads and displays the parameters for any drive type without operator intervention.

Features include factory low-level formatting of all drive types and testing of cache memory and the cache controller subsystem. The software executes only the portions of the diagnostic code that relate to the chip design undergoing analysis.

Micro-Scope 6.0 costs $499.

▶ *Micro 2000*
(818) 547-0125

Caere Corp. has started shipping WordScan Plus 4.0, optical character recognition (OCR) software for Windows.

According to the Los Gatos, Calif., company, WordScan Plus 4.0 increases the accuracy and throughput of converting printed and scanned documents into computer-editable text using Caere's Predictive Optical Word Recognition OCR engine. This engine extends OCR from character to word recognition using 32-bit neural network technology.

WordScan Plus is compatible with Microsoft Corp.'s Office and Novell, Inc.'s PerfectOffice.

WordScan Plus 4.0 costs $595.

▶ *Caere*
(408) 395-7000

Johnston

CONTINUED FROM PAGE 41

put a notice on my directory assistance listing that it was *Computerworld*, the newspaper; not Computerworld, the store.

In mid-January, when the calls had not abated, I called the phone company back. That call was interrupted by another call for the store. When I asked the caller how he got my number, he said he had just gotten it from directory assistance a moment before. The operator had indeed asked if he wanted the newspaper or the store, and when he said the store, the operator gave him my number. Arrrgh!

> Once, while I was on a crucial telephone interview with Bill Gates, my call waiting bleeped. It was the only time I ever put Gates on hold. [The caller asked,] "Where can I get tickets for the underground Seattle tours?"

For nearly six years, I was the Northwest bureau chief of *InfoWorld*. In 1989, an alternate yellow pages vendor listed my office phone as an "information bureau."

Once, while I was on a crucial telephone interview with Microsoft Chairman Bill Gates, my call waiting bleeped. It was the only time I ever put Gates on hold, but I was desperately awaiting a call from a Microsoft competitor to provide the other side to the story.

"Where can I get tickets for the underground Seattle tours?"

Luckily, Gates did not hang up.

On calling the yellow pages vendor, I was told there was nothing the company could do except exclude the listing the following year. I still get calls.

I found that virtually everyone I know has horror stories.

One friend's business phone was misprinted on brochures for a Seattle-area mental health clinic as a crisis line. When he complained, he was told it would be too expensive to reprint them.

And why is it that people can figure out how to program your number into a fax machine but not how to delete it?

In 1990, the leading publisher of a database of members of the computer press transposed two digits for the number of my fax service. It took a couple of months before I figured this out and, in the meantime, several thousand copies of the database went out listing the home phone of a family in this area as my fax number. The publisher sent an update to its subscribers, but the damage was done. I am certain those people still get unattended fax calls at all hours.

What has gotten missed in our headlong rush into the information age is that when a technology gives individuals greater power to influence society, they must also learn to take responsibility for their actions. Because, in the digital world, a simple mistake can proliferate like a virus until it radically impacts someone else's life.

Take responsibility

A poster that was common in many auto repair shops in the 1970s asked, "Why is it you never seem to have the time to do something right the first time, but you always have time to do it twice?"

That should be the mantra for anyone who disseminates information of any sort, not just members of the press. Because the fact is, today everyone is in the information publishing business.

What if this comedy of errors occurred to a suicidal person calling the mental health crisis line and reaching my friend's voice mail instead? What if that person ended up dead?

You can say, "Hey, it's not my fault."

But the real truth is that, in an age when misinformation has the potential to cause so much harm, the answer to the question at the beginning of this column is that each of us is individually responsible.

And one major side effect of the digital revolution is that it has virtually eliminated our margin of error.

Johnston is a *Computerworld* senior editor, PC software.

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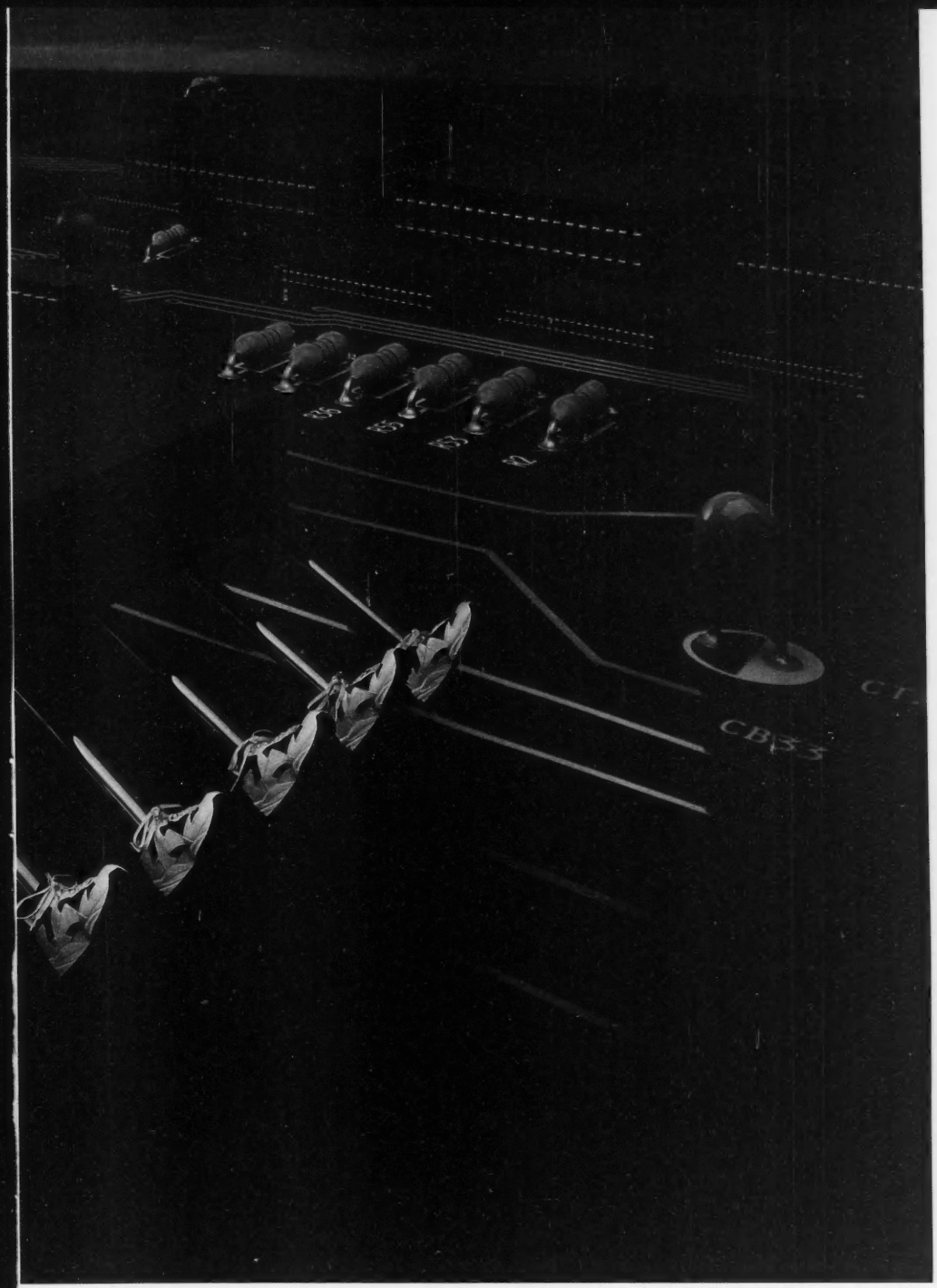

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Personal Computer World, *December 1994* *(United Kingdom)*

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The European, *October 14, 1994* *(Europe)*

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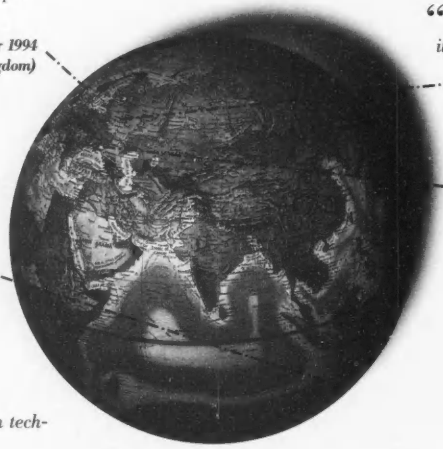
The Courier Mail, *October 18, 1994* *(Australia)*



"*Fast, dependable, able to work better with fewer resources…a viable candidate for standard operating software for the multiplatform PCs of the future.*"

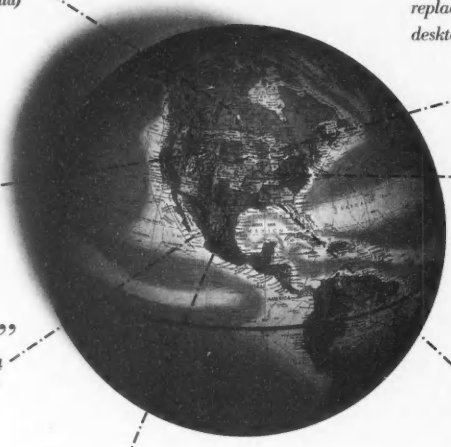
PC Windows, *September 1994* *(Italy)*

"*With Windows 95 delayed…this is IBM®'s window of opportunity. OS/2 has always been technologically superior…*"

Computing Now!, *December 1994* *(Canada)*

"*IBM's OS/2 has quietly evolved from a DOS replacement to a corporate-class, scalable family of desktop and server solutions.*"

PC Week, *November 14, 1994* *(USA)*



"*…no operating system product to date has offered as much out-of-the-box value as OS/2 Warp.*"

InfoWorld, *November 14, 1994* *(USA)*

"*…it's obvious that IBM has put a great deal of time and effort into making [OS/2] Warp a highly-optimized, easy-to-install, and easy-to-use operating system…*"

BYTE Magazine, *November 1994* *(USA)*

"*The wizard of OS/2…the main feature of this new version is that it requires less memory and it provides better performance.*"

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City uses mapping tool to tap information

Project provides greater access to mapping data

By Jaikumar Vijayan

About five years ago, when a measles outbreak in Milwaukee raised concerns about the spread of the disease, health department officials turned to the city's information systems department for help.

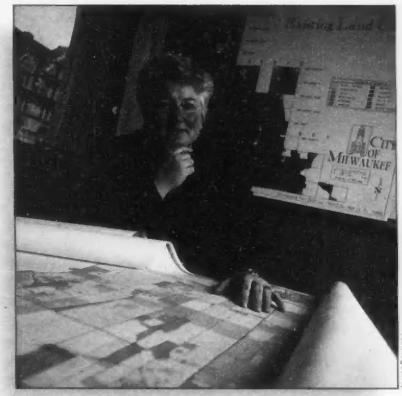
Using data collected by health officials, experts in the IS department's geographic information systems (GIS) consulting services section mapped the reported cases of measles. They also combined the information with geographic and other data culled from a vast land-based municipal information database.

The information they provided health officials was startling and valuable: Measles outbreaks were following a public school bus route.

Using that information, health officials quickly stepped up intervention measures along the suspect bus route to combat the spread of the virus.

"The information provided was very important to us," recalled Kathy Fessler, an epidemiologist in the city's health department, which has used GIS information several times in the past. "GIS has proved to be a valuable resource for the health department."

Now the city hopes to make the same resource available on a much wider scale. It has started working on a project to connect GIS information to the municipalitywide wide-area network, Citynet.



JAMES SCHERER

Holly Loveland, *Milwaukee's IS director, stresses the need to connect all city departments*

The project, called MapAccess, will provide full-fledged desktop access to mapping information, collected over the past 15 years, to all of the city's administrative departments on the Citynet.

The benefits are obvious, said Holly Loveland, director of IS for the city. "We want people to move toward connectivity. We want them to have access to information as a decision-making resource," she said.

Recipe for success

Established under a federal grant and later run as a tax-funded service, Milwaukee's GIS section has provided consulting services to city departments for almost 15 years, according to Loveland.

By taking map-based data and combining it with vast amounts of geographic, commercial, demographic and other data, the GIS section has been able to provide graphical and decision-making information, she said.

For example, in addition to helping the health department, GIS information has been used for voter redistricting, utility infrastructure management, commercial and residential zoning, city property assessments and creating historic districts.

ON SITE

City of Milwaukee IS department
Milwaukee

Goal: To achieve enterprisewide distribution of land-based municipal mapping information.

Strategy: To integrate a Unix-based hardware and software environment with the predominantly NetWare-based PC environments of the user departments.

Results: Full-fledged access to land-based municipal mapping information at each user desktop.

"From the city's perspective, a great amount of data is geographically available," with substantial information associated with each of these geographies, said Bill Shaw, a graphics manager for the city's IS department.

For example, the GIS City Property Data, available on CD-ROM, contains property listings that have as many as 90 fields of data associated with each property.

"There's been a great deal of interest from the real estate market, loan collection agencies, property assessors" and others for such information, Shaw said.

One of many

Most of the land-based information resides on a network of more than 80 dedicated Unix workstations and high-end desktop PCs. The data is contained in Oracle Corp. databases. Most of the applications have been developed on Unix platforms, Oracle's relational database management system, C, Microstation Development Language and some mapping, imaging and archival software.

Milwaukee, *page 57*

Audit software

Managers beef up network security with AuditTrack

By Patrick Dryden

As computing power spreads across LANs, a number of audit tools are emerging to help managers figure out who is doing what with their LAN resources.

Beta testers of an enhanced package for Novell, Inc. NetWare networks, for example, have been monitoring remote entry through their communications servers. For example, they can now track changes to branch-office servers by central information systems and watch out for user misbehavior. In one case, a university managed to catch a prankster who kept substituting pornographic bit-maps for sanctioned screen-saver files, which unsuspecting users were calling from a central server to their PCs.

AuditTrack from On Technology Corp. in Cambridge, Mass., is one of several tools that offer these security features. Released earlier this month, AuditTrack is now available in a Windows version with graphical reports. Similar auditors are also available from Blue Lance, Inc. in Houston and Horizons Technology, Inc. in San Diego.

> Audit Track turned up patterns of improper log-ins and log-outs that caused problems when users tried to run certain programs or print files at PNC Mortgage.

LAN administrators must be able to track user activity, said Bill Holder, director of operations at Micropath, Inc., a Bellevue, Wash., consultancy that specializes in microcomputer asset management. "From a network management standpoint, the benefits of LAN-access auditing often are overlooked," he said.

AuditTrack users who adopted the initial release last fall and beta-tested Version 2 said they appreciate being able to extend surveillance beyond built-in NetWare functions. They can selectively identify all log-in, file and bindery access by local or remote users to any server running the AuditTrack NetWare Loadable Module.

Functional features

"I can set audit filters for staff with supervisor rights to make sure they're not creating back doors or doing anything funky," said Mike Goddard, assistant vice president of IS at Chicago-based PNC Mortgage Corp. of America. He runs AuditTrack on three servers at his office, which is connected by a wide-area network to 15 sites. Each site has its own support staff.

"When I'm not here, others come into these servers to do fixes," Goddard said. "Now I know who logged in and what they did."

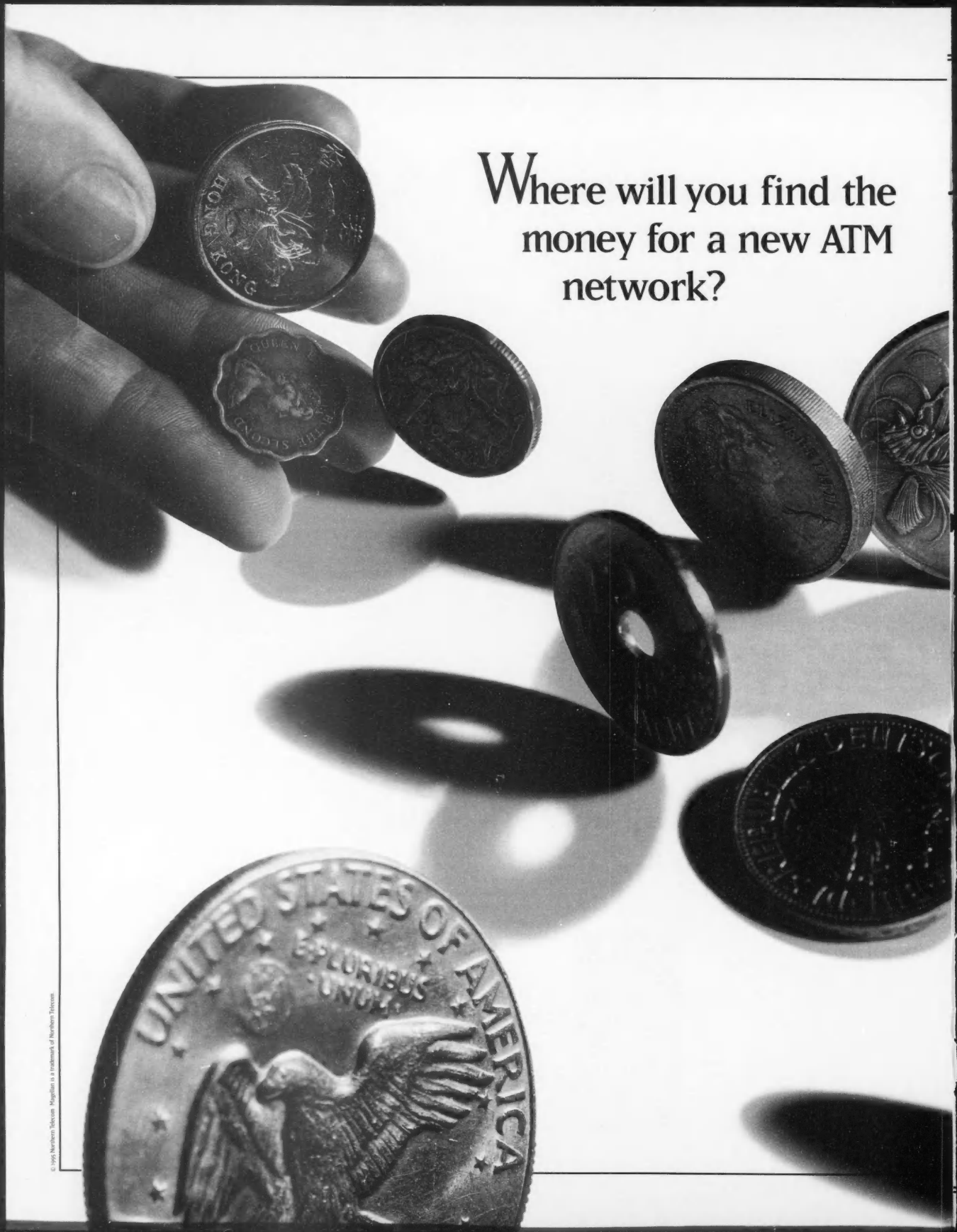
While monitoring users, AuditTrack turned up patterns of improper log-ins and log-outs that caused problems when users tried to run certain programs or print files, Goddard said. "It turned out to be an educational tool," he said.

Tim Crothers, a system specialist at New York-based Home Insurance Co. who is responsible for five branch-office LANs, said he wanted AuditTrack for two reasons.

"I wanted to watch user activity with more details than NetWare 3.11 provided, as well as our central IS," said Crothers, who manages a network for the company's Midwest region. "The corporate group occasionally drops in new versions of software, and others across our WAN can make modifications that may cause disruptions."

At the Boston office of Forum Corp., an international

AuditTrack, *page 59*



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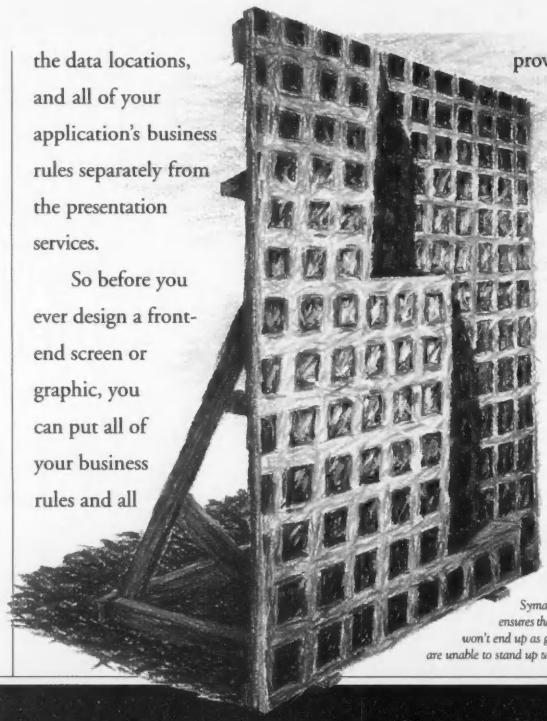

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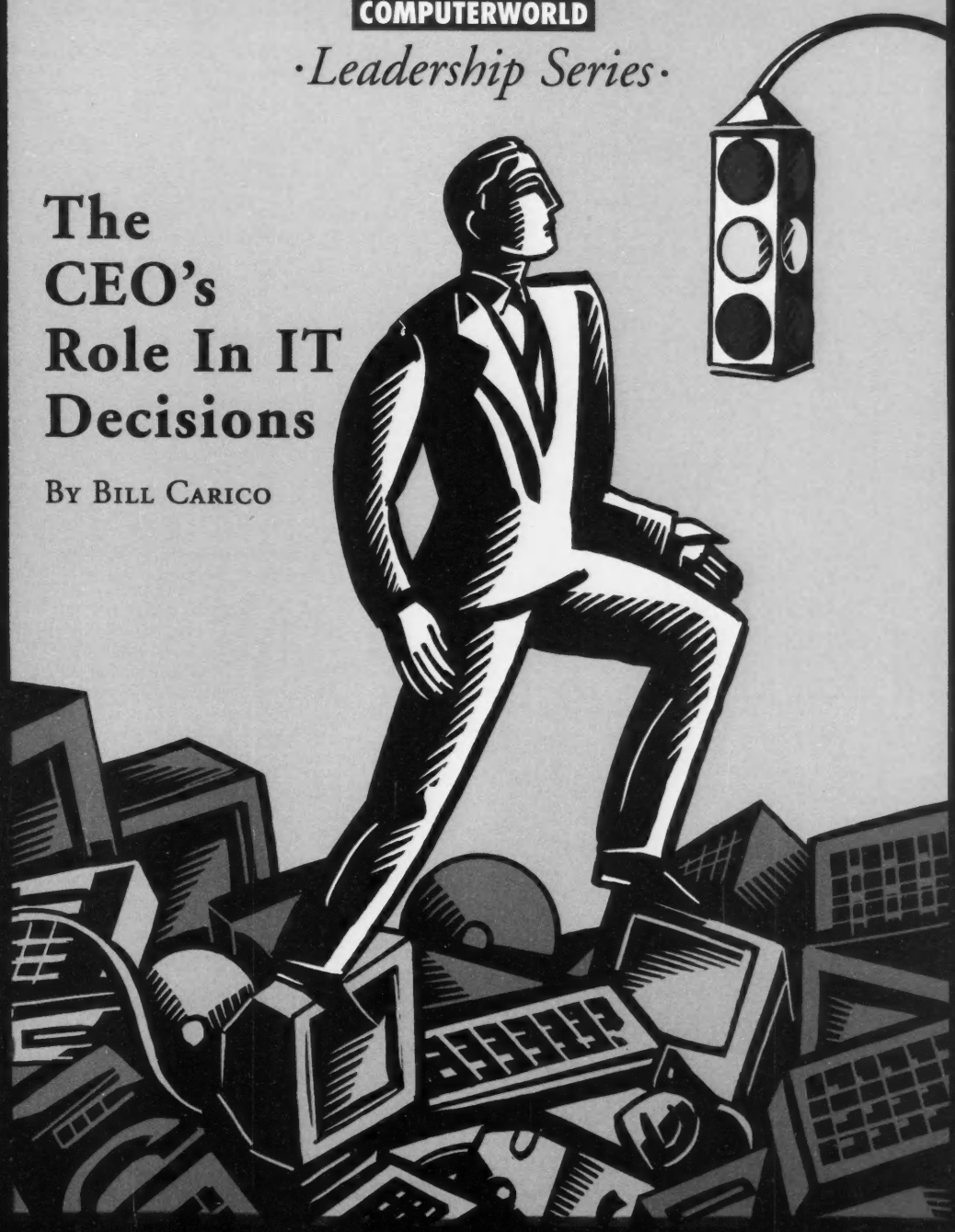
April 17, 1995

COMPUTERWORLD

·Leadership Series·

The CEO's Role In IT Decisions

By Bill Carico



Knowing When To Act

By Bill Carico

ATTENTION, CEOS: Over the past several years, information technology professionals have witnessed a steady stream of top-down directives. The mandate: Convert to client/server and open systems. A large percentage of these conversions have failed, and approximately one-third of these projects have been abandoned. Everyone deserves their fair share of the blame, including top management. Consider the following true story:

To avoid IT investment disasters, companies must rethink when and how to tap senior management's talents

A U.S. multibillion-dollar diversified company was using mainframe and PC LAN technology to provide on-line services for more than 1,500 users. However, senior management was concerned that the company might be left behind in the massive shift to client/server. They had read articles about how other firms had scrapped their mainframes and seen advantages such as big cost savings, improved productivity, faster time to market, empowerment of end users and more flexible access to information. So they asked their specialists about overhauling their existing information technology infrastructure.

The carefully considered reply came back from the glass house: "Absolutely not!"

Unconvinced, management immediately hired an independent consultant for an objective, tie-breaking opinion. Not surprisingly, the consultant's advice was, "Re-engineer everything, shed the mainframe — keep up with your competitors."

Management took the hook. A New Age chief information officer was hired to replace the Iron Age incumbent. The incoming CIO, assuming the obsolescence of the information technology staff, hired outside consultants to work directly with end users. He also put a freeze on any spending for mainframe technology.

After spending $30 million and two years on a carefully phased migration, the firm declared the client/server system production-ready. But there was one problem: It did not work. Critical, end-of-year financial reports could not be generated. No contingency or parallel plans had been

Anyone Can Be Tempted to Buy New Toys. Business-Savvy Staffers Should Closely Monitor Corporate Information Technology Spending to Keep Technologists on Track.

implemented. Within a week, the New Age CIO resigned.

Senior management then turned to the company's mainframe professionals for help. The mainframe "graybeards" completed the operation in eight weeks, cut storage requirements by 60% and cut response time in half. And the system could actually do a trial balance. However, now fearful of aftershocks, end users in the business units wanted nothing more to do with the client/server system.

Effective Participation

How can you, a nontechnical manager, participate in information technology decision-making without disaster? Senior business executives must focus on clearly describing the problems and opportunities while resisting the urge to manipulate or dictate technological solutions.

You must be prepared to let your IT manager run with the ball. Delegate the responsibility of solving problems and taking advantage of new opportunities to the IT manager within agreed business parameters. You can do this successfully if your chief technologist is in a board-level position where he can properly contribute to information technology-related business strategies.

One of the toughest challenges you'll face is staffing. With rapid technological changes transforming the IT function, you need to make sure your IT staff remains current, from the chief technologist on down. For the past 10 years, however, the IT industry has suffered from a continuous brain drain, in many cases leaving "paratechnologists" in charge. The result is an all-time high failure rate for deploying new platforms and new applications. Some analysts estimate that as many as 90% of new applications underachieve what the end user originally commissioned.

Care of vital information lifelines, just as care of heart and lungs, should be entrusted only to a qualified specialist. Prescription without proper diagnosis is malpractice, so beware of technoquacks who talk of paradigm shifts and use trendy buzzwords. Also be skeptical of vendors who "sell high," suggesting that chief executive officers and chief financial officers should make massive technology purchases based primarily on marketing glossies and 35mm slide presentations.

The IT staff should always be included in any sort of product selection to ensure close scrutiny of all issues, which should prevent high costs and low functionality. Unrealistic expectations are too often the result of an impulsive rush to alternatives such as client/server and open systems, though few companies will admit their mistakes publicly. Though various ads and articles may tout the latest technology and success stories, be sure to resist the temptation to act without your chief technologist's input.

Taking Action

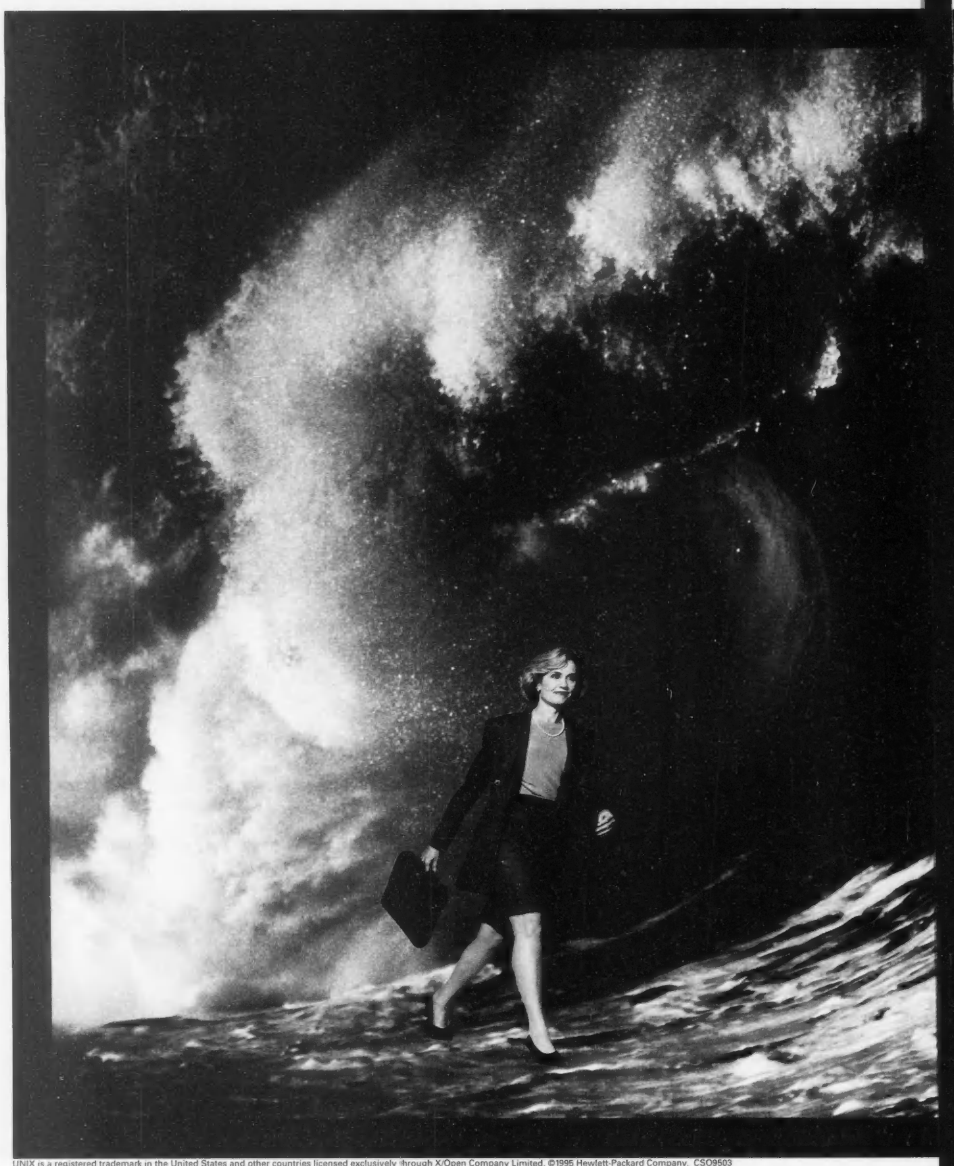
I know what you're thinking. You've looked ahead and see that there are six action items, and you're wondering whether to finish the article. If you are serious about being part of the solution, take the time to read, understand and then act on these recommendations. Information technology issues cannot be reduced to sound bites, and IT planning does not lend itself to principles outlined in *The One Minute Manager*.

• **Measure the business value of IT.** Anything not measured is not managed. Senior executives should always be looking for value, and that doesn't always mean the lowest cost or price. If quality is defined as doing things right, value can be defined as doing the right things. Successful companies continue to develop and refine their own standards for technology, using their own measures for business task productivity.

You should try to quantify the overall economic value to the business of expanding your IT capabilities. Properly applied technology is much more than a simple ROI issue, as it can open up new business opportunities. Where use of systems, especially large ones, appears to be qualitative rather than quantitative, simply look at what it would cost to do business without the systems, including any lost opportunities that would result.

One car rental company with 1,200 telephone agents calculated that it could save $400,000 annually for each second shaved from the average time to book a call-in reservation. Similarly, a credit-card firm justified the investment to add parallel computers to its arsenal by reducing the runtime for a critical application from several days to several minutes, allowing the company to expand its direct marketing efforts. In another case, a major oil company realized $1 million in annual savings by automating a single computer operator task, thereby avoiding periodic system outages.

• **Recentralize control of IT spending while maintaining flexibility.** This may seem obvious, but in re-



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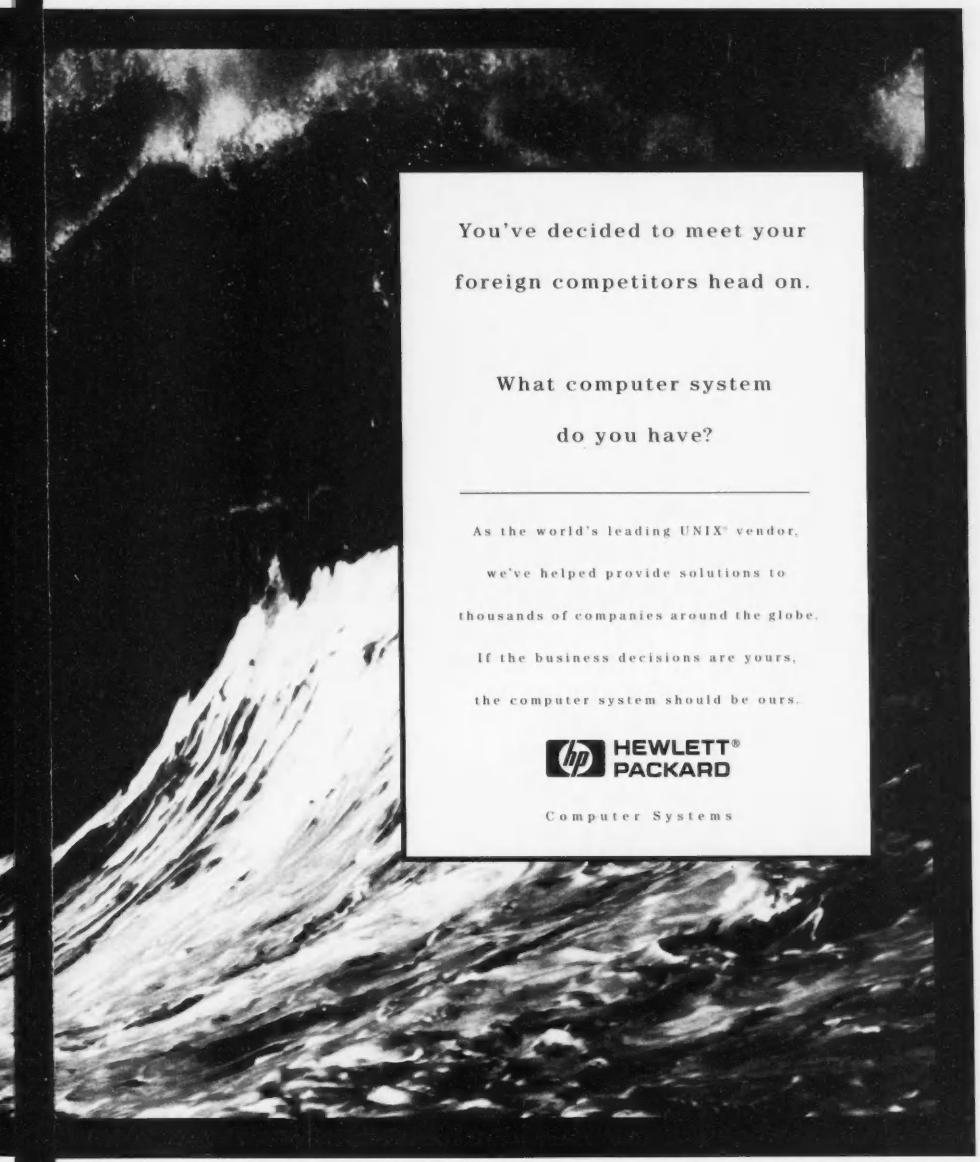
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A CEO Must Be Prepared To Let Technical Management Run With The Ball.

ality, few companies have control and flexibility.

Corporate information is a strategic asset; therefore, technologists handling it should be accountable to competent business professionals. Anyone can be tempted to buy new toys, so business-savvy staffers should closely monitor corporate IT spending to keep technologists on track.

For example, one large company reported annual savings totaling tens of millions of dollars merely by reducing its dozens of PC suppliers down to three. These gains are relatively easy to achieve.

Fragmentation of information services (distributed systems and distributed budgets) leads to loss of IT control in almost every aspect. Centralized control points prevent duplication of tools and efforts. Mandate central control over IT spending wherever possible, but aim to be nimble and flexible enough so business units can fully exploit information technology opportunities.

•Communicate the results you expect in financial terms you understand. Don't let your technologists use cost-per-MIPS to compare computing platforms. Millions of instructions per second (MIPS) should be more appropriately named "Misleading Indicator of Processor Speed," as it presents only a fraction of the performance picture.

It is safer to compare computing systems using cost-per-user or cost-per-transaction numbers, which you can easily do after completing a three- to five-year total cost of computing analysis for all platforms being considered. The analysis gets at the true cost of ownership by totaling cost of hardware, software and personnel tending the technology.

•Keep the IT architecture/infrastructure simple. Successful technology projects today are those that break complex tasks down into smaller, simpler pieces, such as security, resource management, workload management, change management, network management and data management. Unsound IT infrastructures are those that are loaded with unnecessary complexity, resulting in higher support costs.

Numerous studies report that personnel and related development and support costs already represent 50% to 75% of most technology budgets. Management should take note because labor costs can vary greatly by platform and are increasing over time, while the cost of hardware and software is decreasing.

Decentralized models, whether in business or computing, tend to make the underlying tasks or processes more complicated to perform, as opposed to centralized models, in which complicated tasks typically become easier to perform and manage.

International Technology Group, a Mountain View, Calif., consulting firm, surveyed 250 U.S. companies and reported that, on average, it costs 43 cents to process a transaction on a PC LAN, compared with 3 cents on a mainframe. These cost advantages are

Help Wanted: Competent CIO

As CEO, you make an ongoing technology contribution by managing the lead technology executive. Knowing who to hire and when to fire staff members is very important.

If you already have a competent chief technologist with a proven track record, count your blessings and make sure compensation is fair. If you're hiring from the outside, make sure you have an accurate, verifiable report on a candidate's accomplishments. Watch out for those who use fashionable buzzwords.

Be prepared to replace the chief technologist at the first breach of trust. You can't afford to waste time with a cover-up artist or someone of questionable integrity. Nor can you afford to tolerate pride of authorship that insists on pouring more money into a failed or runaway project. You don't want your company to become the next victim headlined in the trade press.

Understand that your IS organization likely contains years of accumulated technical inefficiencies, including a large number of incompetent professionals. Give your chief technologist freedom to eliminate deadwood that has accumulated over the years.

As one executive in the transportation industry, who trimmed his annual IS expenditure over a three-year period from $200 million to $130 million, observed: "There are many people hanging on in IS shops who don't know what they're doing and shouldn't be there. The problem does not lie with traditional mainframe technology; the real problem is the nonresponsiveness to business needs of the people surrounding the mainframe."

typical for a centralized model, due to inherent advantages of resource sharing and economies of scale, which are harder and sometimes impossible to realize using a distributed model. Distributed systems work best when the number of users is small. Question the motives of anyone who tells you otherwise.

• Insist on rigorous pilot testing. Make sure your information systems people can clearly demonstrate proof of concept before you approve any major overhauls of your IT infrastructure. Beware of consultants who try to move your focus away from a technical architecture to one that requires you be synchronized with your strategic business vision. Many consultants/advisers have falsely assumed that a decentralized information technology model provides the best support for a decentralized business model. For most large organizations, this is simply not true.

As numerous victims can attest, a collaboration between centralized and distributed systems leverages the strengths each model has to offer. While many consultants have a financial interest in defining client/server to exclude the centralized mainframe, companies with several hundred end users that use this definition frequently fail.

One such company attempted a wholesale conversion to a decentralized information technology model after a few accounting applications had been moved from the mainframe to a distributed system running Unix. The massive downsizing strategy was aborted when shortly into the migration, the company discovered that the network of distributed systems couldn't sustain its transaction workloads, even after the vendor resized the hardware to twice the capacity originally forecast.

The lesson learned here is to approve no migration plan until your IS department can clearly identify the new system's architectural and practical limits. Hold consultants and vendors accountable. Take legal precautions to protect your interests should problems get out of hand.

Companies can protect themselves by writing performance clauses into contracts and holding consultants accountable for what they promise to deliver. You can avoid what one company, which requested anonymity, went through: suing its consulting firm and winning a $40 million out-of-court settlement. At the consultants' recommendation, this company wasted two years and $40 million on midrange client/server technology that just couldn't handle the workload. It has since acquired IBM ES/9000 mainframes running MVS/ESA and is gradually getting back on track as the company tries to make up for two years of lost time.

• Closely monitor what the IT suppliers are using to run their businesses. Many vendors follow a "do as I say, not as I do" philosophy when they suggest that other companies scrap their mainframes. Major players in the market, including Microsoft Corp., Intel Corp. and Sun Microsystems, Inc., all use mainframes to run their own businesses. If throwing the mainframe on the junk heap were really such a great idea, these vendors would be first in line to do so. Such a move would be a public relations bonanza.

It is no secret, for example, that Intel has tried for years to become reliant on its own x86 systems, but it keeps coming up short. Two years ago, newspapers cited Intel's CEO stating that Intel had just bought its last mainframe. Not surprisingly, those statements were not retracted when Intel increased mainframe capacity last year, nor has Intel publicized its plans to upgrade again this year.

Keeping the above six steps in mind, do your own thinking and avoid as much as possible emotional and political skirmishes when you're evaluating and deploying new technology. The key ingredient for successful information technology deployment is the involvement of competent people. Computer professionals experience rapid-fire rates of change like no other profession, so pay them well and give them the tools and training they need.

Lastly, don't succumb to the tyranny of urgency when making multimillion-dollar IT investments. If you want to use technology as a competitive weapon, surround yourself with competent information technology professionals, take a reasoned, deliberate approach, and firmly adhere to the above action items. As CEO, your enlightened contribution to IT strategy will greatly increase your company's chances for success.

PRESCRIPTION WITHOUT PROPER DIAGNOSIS IS MALPRACTICE. BEWARE OF TECHNOQUACKS WHO USE TRENDY BUZZWORDS.

ABOUT THE AUTHOR

BILL CARICO is president of ACTS, a technology consulting firm based in Marble Falls, Texas, specializing in information technology strategic planning. Prior to joining ACTS, Carico was employed at Intel Corp. and IBM. Carico can be reached at (210) 693-7900 or on the Internet at 76405.1417@compuserve.com.

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Milwaukee

CONTINUED FROM PAGE 53

"Over the years, the GIS network has grown up as an engineering workstation environment" separate from Milwaukee's Citynet, Shaw said. And the challenge will be to integrate this largely Unix world with the almost all Novell, Inc. NetWare environments over the Citynet, he said.

The city's IS department hopes to achieve this through the MapConnect server that will straddle both networks. Shaw said the MapConnect server, which will sit on the Citynet, will be a 90-MHz Pentium-based server running NetWare 4.1 with Network File System (NFS) services and connections to the GIS network.

The challenge will be to integrate this largely Unix world with the almost all NetWare environments over the Citynet.

The IS department uses NFS under TCP/IP to mount library archival information such as engineering maps, land-use maps and tax maps to Unix file servers on the GIS network.

The IS department is working on developing access software that will permit desktop users to pull down the maps and other graphical information from the GIS workstations. According to Shaw, this software will probably be "a combination of Microsoft Access and an internally developed executable engine."

Desktop mapping and viewing software from firms such as the Environmental Systems Research Institute and Bentley Systems, Inc. are also being considered, Shaw said.

Diagnosing the problem

The health department for the city of Milwaukee has used GIS consulting services in many ways.

For instance, several years ago, when a salmonella outbreak associated with milk created a scare in Chicago, Milwaukee health officials were concerned that the disease may have spread — especially when a few cases of salmonella poisoning were reported in Milwaukee.

However, when GIS staff mapped out salmonella serotype and other information collected from the suspected poisoning cases, it was revealed that most of the cases were concentrated in a small area around Marquette University. Follow-up questioning revealed that in almost all instances, those affected by the salmonella were Marquette students who had recently visited Chicago.

In another instance, Milwaukee officials have also used GIS for ongoing studies of lead poisoning among children. By comparing the reported cases of lead poisoning with other geographic data, the city has been able to link the incidents of lead poisoning with homes built before laws regulated the use of lead-based paints.

GIS has also helped health officials test a hypothesis linking the risk of contracting Legionnaires' disease with the proximity to cooling towers and waterways. With information provided by GIS, health officials were able to establish that such a link did exist.

— Jaikumar Vijayan

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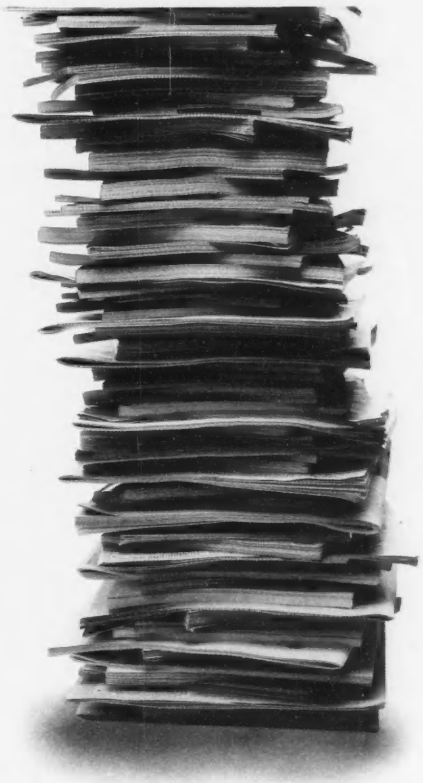

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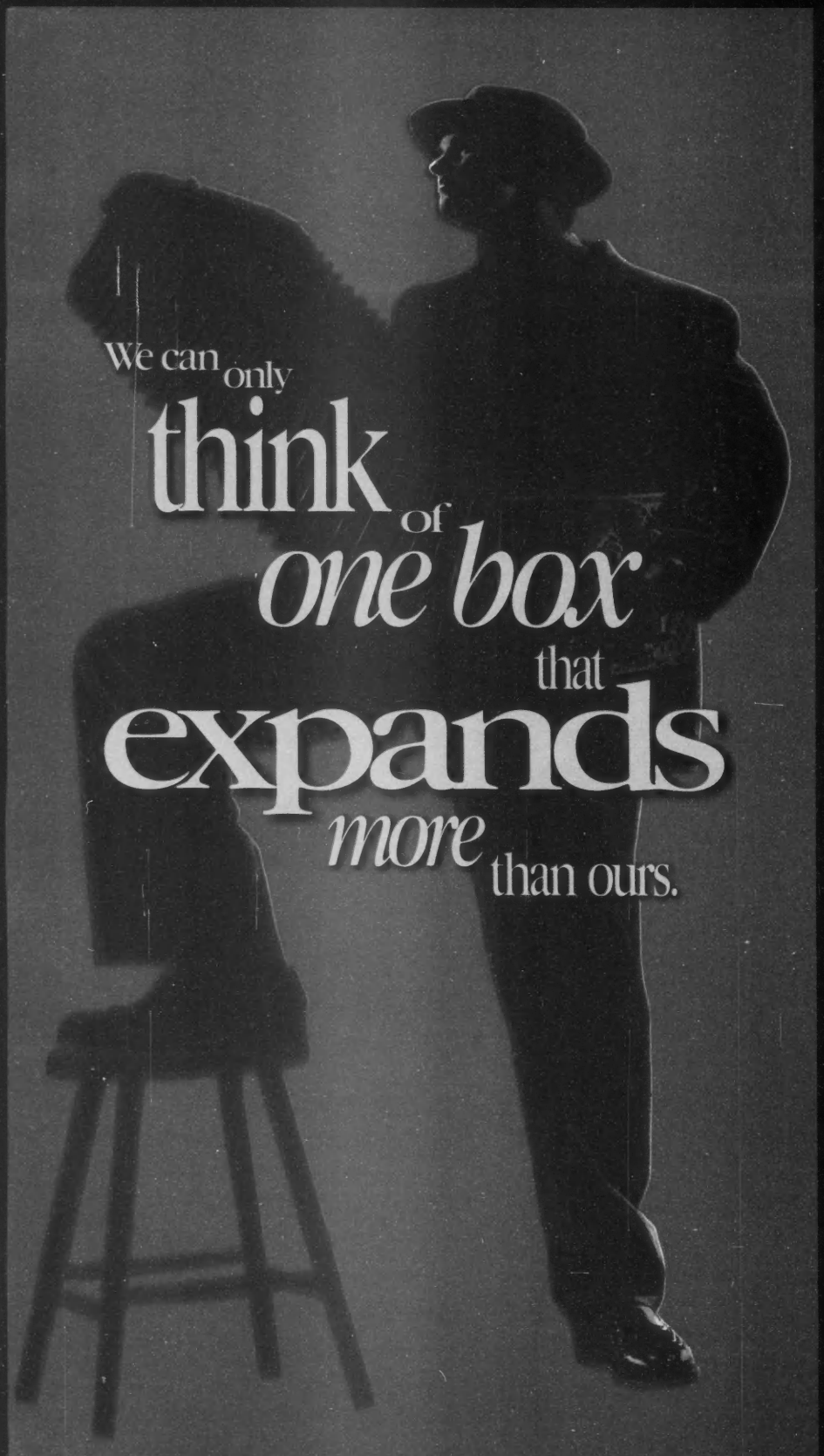
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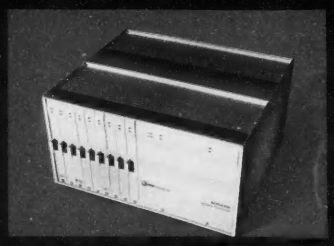

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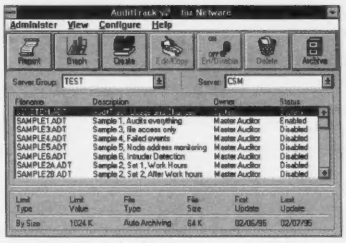
AuditTrack boosts security

CONTINUED FROM PAGE 53

training and consulting service, the IS department is using AuditTrack to help roll out a software development project.

"We're tracking usage of a new on-line knowledge base for 300 users here and at 10 other sites," said Judy Green, manager of document management services. "This lets me examine access trends over time and helps justify investment efforts."



AuditTrack Version 2.0 *allows users to identify all access to servers running its NetWare Loadable Module*

Needed upgrade

However, Green said she would have given up on AuditTrack if she did not have the upgrade to a simpler Windows interface with better reporting options. Green said she needs more flexible reporting for tracking application usage than what this low-level access monitor provides.

AuditTrack Version 2 is available now, and prices start at $495 for 50 users. And according to the beta testers, it works faster than the initial release.

More important to Goddard, however, is the ability to run the new version from any Windows PC station instead of at the server console or remotely via the NetWare RConsole utility.

"Now I don't have to give away my RConsole rights to staff authorized to run AuditTrack," Goddard said. "Security is more important than ease of use. The Windows interface is just a bonus."

Briefs

Sun teams up

Sun Microsystems Computer Corp. and **Broadway & Seymour, Inc.** have announced plans to provide call center and branch delivery solutions for U.S. retail banks. The vendors are also jointly developing a next-generation "retail bank platform of the future," which will be based on Sun's SPARC and Solaris network computing systems and Broadway & Seymour's object-oriented banking packages. The "retail bank of the future" applications will include geo-demographic and psychographic modeling, client profiling and retention analysis and investment management and planning.

Building walls

The **Open User Recommended Solutions** (OURS) organization recently issued a white paper identifying directory and authentication services as a significant barrier to effective network management. The report, titled "A Guideline to Evaluating Directory and Authentication Services," lists 10 strategic requirements for those services. OURS is a nonprofit organization that aims to help its members — users, vendors and service providers — deal with management challenges in multivendor client/server environments.

Aris offers courses

Aris Corp., a client/server consulting and training company in Seattle, was named the exclusive education provider for SunService, the service division of **Sun Microsystems, Inc.** Aris will offer courses for systems administrators at its Sun Microsystems Educational Services Center in Bellevue, Wash.

Effort to address remote issues

Epilogue Technology Corp. and **Xircom, Inc.** have launched an effort to help network managers deal with remote connections by mobile users. A mobile Managment Information Base is needed to help central staff isolate problems and improve connections for far-flung users via the Simple Network Management Protocol, proponents said. Proposed object types for a new MIB address configuration, power and communication characteristics of laptop and remote-access nodes. For information and participation, contact ideas@xircom.com.

CA becomes French standard

Thomson-CSF, a French defense electronics firm, has said it will standardize on **Computer Associates International, Inc.**'s CA-CAS/Unix client/server manufacturing suite.

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CD-ROM training wins audience

By Tim Ouellette

Multimedia is wriggling its way into the workplace through corporate training departments, according to a recent study by OmniTech Consulting Group, Inc. in Chicago.

But this is not necessarily good news for independent multimedia developers. A majority of companies surveyed now create their own CD-ROM training applications in-house, combining text, graphics, audio and video.

"Like word processing, multimedia development tools will become more and more user-friendly," said Joel Krauss, a principal at OmniTech. "Development of multimedia presentations will be no harder than writing up a letter in a word processor."

Researchers questioned officials at 75 companies that currently use some form of multimedia for training purposes. Most companies were involved in manufacturing or finance and had total annual sales of more than $1 billion.

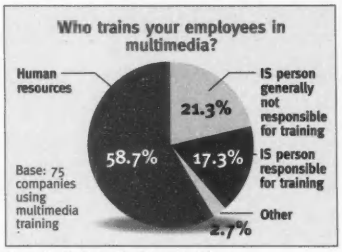
AT&T Corp.'s School of Business in Somerset, N.J., has begun moving more programs to multimedia. "Cost is a significant driver," said June Maul, new product development and business education director. "Multimedia is expensive to invest in to develop a really good CD-ROM. But in general there is a 25% to 50% cost savings if there is a large training base."

Although AT&T is a very large company, size was not the catalyst for multimedia training development. According to the survey, companies with high training volume are more inclined to invest in in-house multimedia development, regardless of the size of the business. These firms look to save on the so-called soft costs of traditional classroom training—travel, teaching fees and time away from work.

Information retention is another factor. "If you can do just-in-time training, employees will retain more" by looking up information while on the job, Krauss said.

The explosion of the market for multimedia is also leaving enough business for outside developers. Micro Training Associates in Canton, Conn., provides training products to Fortune 500 companies, mainly in finance and telecommunications. According to company President Marilyn Albin, the trend toward internal development has been balanced by the number of multimedia projects.

"What I have seen in the last year is a tremendous groundswell in interest in multimedia," Albin said. "But many companies' interest and willingness are far ahead of their actual capability," so they turn to outside expertise such as that of Micro Training to prop up their training staff.



Source: OmniTech Consulting Group, Inc., Chicago

To Albin, the most important factor driving multimedia in the workplace is not the visual but the audio effects. "The audio element is the new and fascinating component. It creates more of a feeling of personalization," she said.

Technical and computer training courses were the most popular multimedia training applications in the survey, but both Albin and Maul said training materials in customer service, negotiation and management were the most effective.

"Executives who don't like to play with PCs really get engaged with CD-ROM," Maul said. "You don't have to be computer-literate to use it, and it becomes a good entry point to using a PC."

If multimedia users are new to computer technology, the same can be said of those directing multimedia development. Human resources and nontraining staff are usually the people directing multimedia course development instead of information systems personnel. This is not a problem, according to Krauss. "It's new to everyone; everyone is checking multimedia out," he said.

To companies that feel they should be initiating some form of multimedia training, Albin warned, "There is a temptation to throw money into multimedia." She said firms must ask themselves where multimedia training would be put to the most use — for example, in customer service — instead of moving all areas of training to multimedia applica-

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New Products

Franklin Telecom Corp. has released Hurricane/155, a line of LAN transmission products for client/server communications.

According to the Westlake, Calif., firm, Hurricane/155 runs at 155M bit/sec. and delivers Asynchronous Transfer Mode speeds to the desktop with sustained throughput of more than 9.4M bit/sec. It incorporates LAN emulation and packet burst features to reduce processing overhead and network delay.

Hubs and concentrators are available in an eight-port tabletop version or a 22-port rack-mountable format.

Pricing for adapter boards starts at $299. Hub and concentrator pricing starts at $1,990.

▶ *Franklin Telecom*
(805) 373-8688

Primavera Systems, Inc. has announced Primavera Project Planner 1.1 for Windows (P3 1.1), project management software.

P3 1.1 is designed for project managers who need multiuser and multiproject capabilities, enterprisewide communication and broad analysis and reporting functions.

According to the Bala-Cynwyd, Pa., firm, P3 1.1 eases the tracking and management of data across several projects, automates posting and time sheet generation and offers flexible data security.

Pricing for P3 1.1 starts at $4,000 for the first license.

▶ *Primavera Systems*
(610) 667-8600

Revelation Technologies, Inc. has released Revelation NetWare Loadable Module (NLM), to reduce traffic on Novell, Inc. NetWare 3 or NetWare 4 networks.

According to the Stamford, Conn., firm, Revelation NLM reduces network traffic by using NetWare operating system services to process data on the file server, providing a high level of data integrity. And with less traffic, there are fewer network errors and faster network speeds.

The product costs $1,495 per server.

▶ *Revelation Technologies*
(203) 973-1000

Beame & Whiteside Software Ltd. has started shipping BW-Connect Network File System (NFS) Server for Windows NT, multitasking NFS server software.

According to the Raleigh, N.C., company, BW-Connect NFS Server for Windows NT converts any Microsoft Corp. Windows NT computer into a shared NFS server capable of providing full services to any NFS client. It is written as a native 32-bit Windows NT application capable of handling multiple requests for data access.

The software installs as a native Windows NT service and does not require a dedicated computer.

BW-Connect NFS Server for Windows NT costs $295.

▶ *Beame & Whiteside Software*
(919) 831-8989

Leunig Communications, Inc. has announced DuoNet Plus, a self-powered sharing device for notebook-to-notebook or desktop-to-desktop networking through a standard parallel port.

According to the San Jose, Calif., company, DuoNet Plus lets users of Microsoft Corp.'s Windows for Workgroups 3.11 share files, disks, tapes and fax modems.

The product uses standard printing cables for connection and lets both computers access a common printer. DuoNet Plus includes two disks to provide Windows and DOS users with simple file transfer capabilities.

DuoNet Plus costs $129.

▶ *Leunig Communications*
(408) 441-6560

Creative Assistance Software has released WatchLogon 2.0, a password security tool for IBM's OS/2 LAN Server 3.0 and 4.0.

According to the Charlotte, N.C., company, WatchLogon 2.0 lets network administrators monitor activity, automatically disable accounts after a set number of password failures and change the configuration without stopping the monitor.

The tool includes a presentation manager that lists WatchLogon actions, checks the audit log and charts log-on activity.

WatchLogon 2.0 costs $199.

▶ *Creative Assistance Software*
(704) 544-0001

Product shorts

Legato Systems, Inc. has started shipping the NetWorker Database Module, data protection products that support databases from Oracle Corp. and Informix Software, Inc. It performs on-line backup of Oracle and Informix databases and separate tape and optical storage devices. Cost: $3,000. Legato Systems, Palo Alto, Calif. (415) 812-6000.... **Software Professionals, Inc.** has announced the ENlighten Open Systems product line, an integrated suite of system administration products. The line supports IBM's AIX, Hewlett-Packard Co.'s HP-UX, Sun Microsystems, Inc.'s Solaris and SunOS and The Santa Cruz Operation's SCO-Unix platforms. Cost: Starts at $360. Software Professionals, San Mateo, Calif. (415) 578-0700.

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Novell forces migration issue on NetWare 2.xers

By Laura DiDio

■ Until recently, the hype and hyperbole centered around Novell, Inc.'s NetWare 4.1 had relegated older NetWare 2.x users to back burner status.

No more.

Vendors, including Novell itself and rivals Microsoft Corp. and Artisoft Corp., have suddenly realized that with more than 6 million installed NetWare 2.x nodes worldwide, this group is a powerful and pivotal bloc.

While many NetWare 2.x loyalists would be content to stay with the platform, Novell is forcing the issue. The company has not released any updates to the older network operating system for at least a year and has said it will no longer support it. Like it or not, users will have to migrate.

And users are responding to the wooing. While some are upgrading to NetWare 4.1, others are opting out of Novell entirely.

Go with NetWare

Hibernia National Bank in New Orleans, which has more than 2,500 users, stayed with Novell.

"We initially had one or two NetWare 2.x servers and naturally followed the migration curve to 3.x and 4.02 in our branch offices," said Thad Hymel, manager of Hibernia's distributed systems department. "Going with NetWare 4.1 was a natural progression" because as a longtime Novell user, the bank was familiar with the NetWare environment and satisfied with its service and support, Hymel said.

But Dave Geiver, network and technology supervisor at First Premier Bank in Sioux Falls, S.D., opted for an alternative network operating system — Artisoft's LANtastic Power Suite. The new Artisoft system combines mail and communication software from such vendors as Lotus Development Corp. and Cheyenne Software, Inc.

Geiver said the LANtastic Power Suite holds more appeal for him than NetWare 4.1 or Microsoft's Windows NT Server because it uses established software packages with the core LANtastic network operating system. "This means I can implement Power Suite quickly and without the fear of bugs that are normally present in 1.0 product releases," Geiver said.

Sales pitching

For its part, in the last several months Novell has mounted an aggressive marketing and sales campaign aimed at moving NetWare 2.x users to the NetWare 4 platform, said Ladd Timson, the company's director of market development for NetWare products.

"We're discounting 35% off list price, doing direct marketing and giving users a slew of migration and upgrade tools and a NetWare 4 satellite broadcast that reaches 12,000 resellers and end users each month. These things are all designed to make the migration as simple as possible," Timson said.

Novell rivals are casting their own lures in the hope of gaining users.

Microsoft is offering lower-priced upgrades and has a specially priced five-user version of Btrieve 6, which runs a variety of NetWare applications, for $99, said Mike Nash, product manager for the Windows NT BackOffice Suite.

Artisoft's LANtastic Power Suite is targeted at businesses with 50 to 100 users "who are looking for a [network operating system] and communications software in a single package," said Sunil Padiyar, the company's vice president of software products.

NetWare 2.x installations have typically been composed of small businesses or remote offices with small or entry-level LANs of 25 nodes or less, according to Stan Schatt, LAN Service director analyst at Computer Intelligence

Novell, *page 65*

Minority of millions

"NetWare 2.x is a minority but a very big minority," said Lee Doyle, an analyst at International Data Corp. Doyle estimated there are still more than 500,000 NetWare 2.x servers and close to 6 million nodes installed worldwide. That is five times the number of NetWare 4.x licenses that were installed as of January, Doyle said.

Environmental agency consolidates E-mail

By Suruchi Mohan

It wasn't cost savings or a desire to downsize the information systems staff that drove the Environmental Protection Agency to integrate its electronic-mail systems. The need was as simple as letting the people in the organization communicate with one another and with the outside world.

And for the most part, the government agency has been able to do just that. It has brought together more than 16,000 users throughout the U.S. by integrating four LAN and host-based E-mail systems. Users on these systems can communicate with one another without logging on to another E-mail system.

The project is more than half done. And so far, the results have been good, despite a lot of technical pain along the way.

One mailbox

Messaging has become a lot simpler, according to Mike MacDougall, chief of the information management branch of the EPA in Boston. Before the project, each person had at least two mail packages, and communication via the Internet was not easy, either. "Now it is all within the WordPerfect Office mailbox," MacDougall said.

Tim Sloane, an analyst at Aberdeen Group in Boston, said, "It is a common trend. Linking the messaging systems is deceptively simple. What isn't straightforward is getting the connection to be reliable and manageable."

The EPA has certainly had its share of technical woes since the inception of the project in 1992. Back then, the National Data Processing Division (NDPD) — which handles all of the EPA's computing needs — decided that something should be done to let E-mail users communicate better. At the time, the EPA had a mish-mash of E-mail systems, including Digital Equipment Corp.'s All-In-1 and MailWorks; WordPerfect Office from WordPerfect, the Novell, Inc. Applications Group; Lotus Development Corp.'s CC:Mail and Notes; and Simple Mail Transfer Protocol-based mail.

"Two things were necessary," said David Bittenbender, EPA chief of telecommunications in Research Triangle Park, N.C. The first was ease of use: Anyone in the EPA should be able to send messages to anyone else just by knowing the other person's name. Second, he said, the integration should be possible using a standard messaging interchange format such as X.400.

Although the project was temporarily dropped because of some problems with the technology on the market, the matter was reopened in May 1993. At that point, Maureen Johnson, acting deputy director in the office of administration and resource management in Research Triangle Park, pushed for the project to be reexamined because she felt the technology had caught up with the agency's needs. Johnson laid out a scenario of how it would work and, most importantly, received approval from upper management to go ahead with the project.

But there was a lot to do before the show could go on the road. For one thing, the PCs of an earlier era had to be upgraded to 486s. The EPA decided each geographical region would have its own rollout schedule for the upgrade.

The EPA's Maureen Johnson *developed a scenario and received approval to go ahead with the E-mail project*

Also, users of WordPerfect Office had to be upgraded to Novell's GroupWise 4.0 suite and retrained to handle the different software. The upgrade was needed because, among other problems, the WordPerfect Office gateway could not handle binary file attachments to messages and name translations between All-In-1 and WordPerfect Office.

What's the holdup

The pilot, initially slated for Jan. 1, 1994, did not start until March because of a raft of technical issues. These included a limited availability of unique names for people's log-ons, said Greg Williams, senior analyst at Martin Marietta Technical Services, Inc., which is helping the EPA implement the project.

Also, the necessity of upgrading to Version 4.0 of GroupWise was a stumbling block because of the large numbers of users involved.

And some missteps along the way did not help matters. For example, according to Tommie Rogers, E-mail manager for the EPA in Research Triangle Park, some of the regional offices tried to upgrade to GroupWise 4.0 without upgrading their 286-based machines, which led to performance problems. Some 90% of the complaints about the performance of the integrated system came from users running GroupWise on slower machines, Rogers added.

EPA, *page 65*

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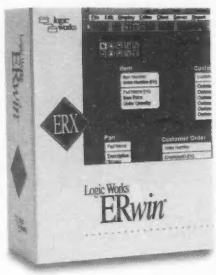

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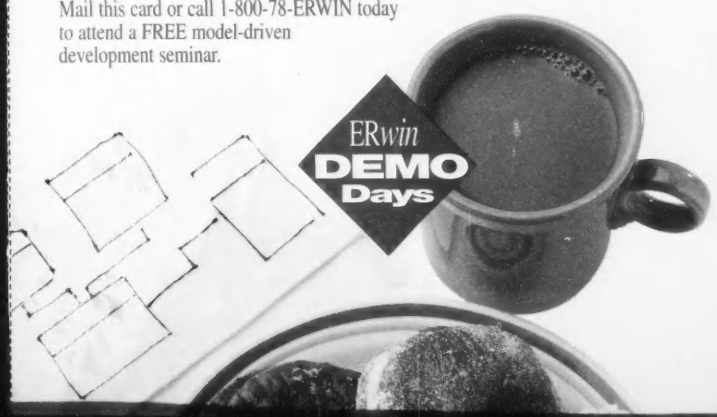

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EPA

CONTINUED FROM PAGE 63

An infrastructure issue had to be addressed as well, Johnson said. A nationwide Novell IPX network had to be extended to all regions before anything could even start to be integrated. The agency needed IPX because it uses NetWare, which supports IPX natively.

The IPX network was completed in the summer of '94. An X.400 backbone — Digital's MailBus 400 — links the LAN and host-based systems. The X.400 protocol runs over X.25 and IPX transports.

In July 1994, the NDPD felt the agency was ready for the rollout. New England was the first region on board, followed by Chicago and New York. When the project is complete, some 25,000 users will have integrated E-mail systems.

But even then, the E-mail group will not be able to cool its heels. Bittenbender said he and his colleagues will have to deal with high customer expectations. "They want all the features of a central system in a distributed environment," such as centrally maintained distribution lists, almost 100% uptime and better network management, he said. "That will take more staff time than doing the rollout."

Novell

CONTINUED FROM PAGE 63

InfoCorp in La Jolla, Calif.

In the past, owing to the lack of competition, Novell essentially owned the small-LAN market. But a lot has changed.

"Basically, we've got a situation where over 6 million nodes are up for grabs, and that's just for openers," Schatt said. "Their numbers are growing and also encompass remote and branch offices at Fortune 500 companies."

At one time, he noted, these small or entry-level users would have automatically bought NetWare 2.x. But Novell stopped selling the product in 1989, Timson said.

Leapfrog to Version 4

Such was the situation at the Delafield Library in Delafield, Wis., which migrated directly from NetWare 2.x to the NetWare 4 platform. Polly Gropen, library director, said this decision was based on advice from a local outsourcing firm that said it would be easier and more strategic in the long run to bypass NetWare 3.x.

"We've encountered no difficulties, and I think NetWare 4 will take us further into the future," Gropen said. "Another reason for choosing NetWare 4 was that our library software runs on NetWare and the company that makes the software — MacMillan/McGraw Hill's Columbia Software — provides support for NetWare but doesn't support other network operating systems."

Still, Schatt and Lee Doyle, an analyst at International Data Corp. in Framingham, Mass., caution that not every NetWare 2.x user will upgrade to another Novell platform.

"Novell's marketing message to the NetWare 2.x installed base is not convincing yet," Doyle said. "I think many 2.x users will stick with what they have or migrate to 3.x or look at alternatives. There are bound to be a good number of defections."

Reliability plugged as wireless feature

By Michael Fitzgerald

Air Communications, Inc. hopes that focusing on reliability rather than speed will make its product something wireless data users cannot do without.

Haphazard reliability is the bane of cellular users. Anyone who has used a cellular phone or sent data via a cellular network knows that making connections is about as difficult as getting a lunch date with Bill Gates.

Air Communications claims it has created a way for users to get connect rates as high as 95% using its AirTrue technology. The company has put AirTrue on the market in a cellular phone/modem/fax.

Air Communications is further focused on what its founders think is the obvious wireless data market — circuit-switched cellular. It thinks the lion's share of wireless data will continue to be transmitted via this standard technology, despite the amount of attention garnered by the Cellular Digital Packet Data protocol and the efforts of data-only services such as the Advanced Radio Data Information Services network and RAM Mobile Data USA L.P.'s Mobitex network.

The bet might not be a bad one because circuit-switched cellular has as many as 10 times more data users than the other major wireless data providers combined.

Accordingly, AirTrue runs only over circuit-switched cellular and regular phone lines. What makes the technology worth looking at is the company's claim of 95% connectivity rates over cellular networks, a percentage that would make the typical cellular user choke with happiness. At least one user said the claim was true — in some areas.

"Initially we saw 90%-plus connect rates," said Brian Coughlin, a telecommunications analyst at the Public Broadcasting Service (PBS) in Alexandria, Va. Coughlin added, however, that these connect rates were not always possible because the quality of cellular networks varies in different parts of the country.

PBS uses Air Communications' Air Communicator, a combination cellular phone, data and fax machine. Coughlin said PBS picked the product because it can work over standard phone lines as well as the cellular network.

PBS has experienced data rates as high as 14.4K bit/sec., although 9.6K bit/sec. is the norm.

"Reliability was the big factor for us," Coughlin said.

Analysts said Air Communications, a Sunnyvale, Calif., start-up that had $1 million in sales last year, has good technology. They said the company may need to license its technology to get cheaper versions of the phone, which costs between $700 and $900, to market.

"A lot of companies with great technology never got anywhere," said Iain Gillot, an analyst at Link Resources Corp. in Framingham, Mass. "This is very nice technology, but when can I buy it" at a reasonable price?

Gillot said Air Communications had probably sold an average of 250 phones a month in the past four months compared with the 5,000 cellular phones a major player such as Ericsson, Inc. sells monthly.

Arthur Q. Gutch, Air Communications' vice president of marketing, said the company was looking into licensing deals with a variety of manufacturers.

True warning

AirTrue leverages the basic cellular phone network, which schedules in regular "events" such as power charges and network audits. These will typically be seen as noise and can disconnect data transmissions. But AirTouch, by keeping tabs on the schedule, can avoid this problem or warn users that an event is about to happen.

Data Link Switching standard in the works

By Suruchi Mohan

A standard is in the making to help administrators manage mainframe data running over Internet Protocol (IP) networks.

"Whenever you have a system operating across networks, it's helpful to [isolate] the problem so each component can identify itself, report what's happening and [allow itself] to be managed," said Louise Herndon Wells, director of IBM internetworking at Internetwork Technology Institute, a consultancy in Milpitas, Calif.

These are the sort of things the standard-in-progress will provide.

A multiprotocol standard is particularly needed for large companies that want to run SNA traffic over IP networks. To do this, the SNA data needs to be encapsulated; this process is known as Data Link Switching (DLSw), and it comes with its own peculiar set of management needs.

For example, DLSw needs its own Management Information Base (MIB). The MIB contains information about the various components of a network, and there are various MIBs to address different pieces of the Simple Network Management Protocol (SNMP).

A MIB is needed for DLSw because existing MIBs do not have the ability to gather all the DLSw-specific information that network administrators need to keep the network up and running, said Peter Gayek, advisory programmer at IBM's networking hardware division in Research Triangle Park, N.C.

This information includes the ability to monitor transport connections between DLSw routers, the circuits going over the transport connections and the cache in the DLSw router.

To address this need, the APPN Implementers Workshop (AIW) and the Internet Engineering Task Force (IETF) are developing a MIB to provide SNMP-based management for DLSw networks.

This is an important step because "DLSw will be implemented on multiprotocol routers — and those are using SNMP," said Don Czubek, president of Gen2 Ventures in Saratoga, Calif. The IETF and AIW are being farsighted in developing a MIB because right now implementation of DLSw is just starting, and management will become more of a necessity when organizations scale up, he said.

Information provider

SNMP-based management consists of an umbrella MIB — MIB-II — that provides generic system and interface information, said Deidre Kostick, a member of the technical staff at Bellcore in Red Bank, N.J. "If you want additional information specific to a particular protocol or specific device, you need to identify objects by defining MIB modules. The MIB structure is extensible and lets you add objects of information in a structured way," she said.

But the MIB merely gathers and stores information it receives from agents. To do anything useful with this information that will benefit the network administrator, the various products on the network must also support the DLSw MIB. Some vendors, such as Cisco Systems, Inc. in San Jose, Calif., and Cabletron Systems, Inc. in Rochester, N.H., plan to support the MIB when the specification for the standard becomes available by midsummer.

Further, application developers for providers of network management platforms, such as IBM and Hewlett-Packard Co., will have to write applications that support the DLSw MIB. The platform providers themselves will not have to write additional code in support of the MIB.

'net show captivates prime timers

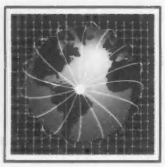
By Ellis Booker

■ Spring Internet World in San Jose, Calif., last week showcased a host of new World-Wide Web installations, information management tools, network upgrades and partnerships — many of them geared toward boosting the commercial viability of the 'net.

The show was expected to draw between 15,000 and 20,000 attendees — double the turnout of the December 1994 show in Washington.

The expected crowds are as good a measure as any that the Internet has moved into prime time, captivating tens of thousands of new users as well as the largest commercial interests.

Among the announcements at the show were the following:



● **IBM** showcased several customer installations on the Web as well as transactional systems similar to its earlier work with PC Gifts & Flowers, an Internet shopping service in Stamford, Conn. The computer giant will also announce upgrades to the IBM Global Network to support Asynchronous Transfer Mode (ATM), Integrated Services Digital Network (ISDN) and a larger number of 28.8K bit/sec. access points. It also plans to triple its local Internet dial-up access points to 450 worldwide by the end of the year.

IBM introduced information management tools and technologies for the Web that will enable customers to access diverse databases and existing business systems securely via a Web interface.

● A loose consortium of four companies, collectively known as the **Electronic Business Co-op**, demonstrated a secure infrastructure for making credit-card purchases across the Internet. The consortium hopes to have a commercial offering by late May.

The group is composed of Tandem Computers, Inc., which is supplying its just-announced on-line transaction processing (OLTP) Web servers; CheckFree Corp. in Columbus, Ohio, which will employ its credit authorization systems; Spyglass, Inc. in Naperville, Ill., which will supply its Enhanced Mosaic browser; and V-One Corp., which is providing a smart-card-based encryption/decryption security scheme for the system.

● **Open Market, Inc.** in Cambridge, Mass., showed off its Integrated Commerce Environment working with the Small Business Advisor, a collection of more than 5,000 articles from Lexis-Nexis in Dayton, Ohio, a division of publishing and information business company Reed Elsevier, Inc.

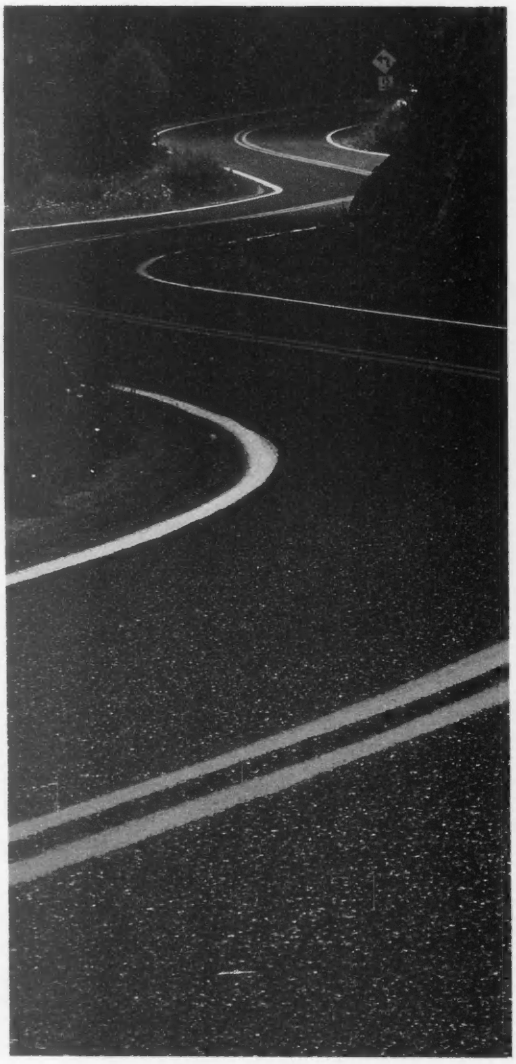
The system's most unique feature is transactional pricing of the Lexis-Nexis content. Users are authenticated in real time and then can view, print or download articles at prices starting at $1.95 per story.

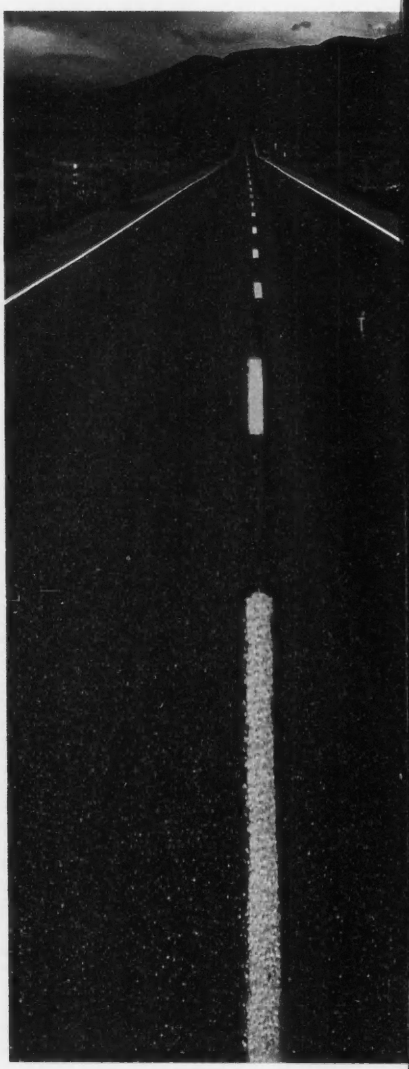
● **Connect, Inc.** announced its OneServer, said to be the first on-line application platform that can be accessed both by Web browsers such as Mosaic and custom TCP/IP client software or via X.25 networks. The platform will be available this month at a starting price of $10,000.

● **Prodigy Services Co.** in White Plains, N.Y., which recently announced a new pricing structure — $30 for 30 hours of usage in any mix of Prodigy or Internet services — released the next version of its Web browser. The browser features adjustable fronts and colors, forms support, integrated electronic mail and more.

Separately, Prodigy introduced multimedia for its standard service. Company sources said a 4M-byte version of Prodigy's next-generation Windows 3.1 interface, called P2, will hit the streets within 60 days, while development of the 8M-byte product has been recast to be available only under Windows 95, Microsoft Corp.'s upcoming operating system.

Which route would you take





Other parallel database software

New DB2 Parallel Edition for A

Outside North America, contact your local IBM office. *Information derived from trade articles and press releases. IBM, AIX and DB2 are registered trademarks and Information Warehouse is a trademark of International Business Machines Corporation.

New Products

Toshiba America Information Systems, Inc. recently introduced the Noteworthy fax/modem.

According to the Irvine, Calif., company, Noteworthy is one of the first v.34 PCMCIA modems able to run over circuit-switched cellular networks.

The Noteworthy fax/modem is a Type II PCMCIA card. It uses Celeritas Technologies Ltd.'s TX-Cel throughput enhancer.

The Noteworthy fax/modem costs $399.

▶ *Toshiba America Information Systems*
(714) 583-3000

Chipcom Corp. has announced the Ethernet Remote Monitoring (Rmon) MultiProbe Module, a hardware agent that monitors multiple network segments from a Chipcom OnLine System Concentrator or Oncor Switching System.

According to the Southboro, Mass., company, the Ethernet Rmon MultiProbe Module enables users to establish network warning and analysis systems and troubleshoot problems from a central console.

The product features per-port collision counters as well as port-to-address correlation, which lets users identify the port that captured Rmon data.

The Ethernet Rmon Multiprobe Module costs $6,995.

▶ *Chipcom*
(508) 460-8900

Palindrome Corp. has announced Prepare 2.0, disaster recovery planning software for network managers.

According to the Naperville, Ill., company, Prepare 2.0 provides tutorials to guide first-time planners and includes boilerplate sample plans.

The software generates a full disaster recovery plan report. It also includes customization options and integration with popular business applications.

Prepare 2.0 costs $995.

▶ *Palindrome*
(708) 505-3300

Secure Computing Corp. has announced the Lockout Authentication Server.

According to the Roseville, Minn., company, the Lockout Authentication Server provides security protection through remote identification and authentication.

It can be configured with up to 64 serial lines and provides protection for dial-up Telnet and file transfer protocol connections.

Prices start at $9,995.

▶ *Secure Computing*
(612) 628-2700

Hewlett-Packard Co. has announced NetMetrix 4.5, a suite of network fault and performance management applications.

According to the Palo Alto, Calif., company, NetMetrix 4.5 includes an Internetwork Response Manager that measures wide-area network latency and allows testing of switched networks.

The Internetwork Monitor, Load Monitor and Protocol Analyzer applications fill out the suite.

NetMetrix 4.5 is available in two packages, one for $6,090 and one for $12,690.

▶ *Hewlett-Packard*
(415) 857-1501

NetManage, Inc. recently announced Chameleon Desktop 4.5, six application suites for integrating corporate and public LANs.

According to the Cupertino, Calif., company, Chameleon Desktop 4.5 includes 48 internetworking applications arranged into the following suites: file and printer sharing, connectivity, electronic mail and messaging, Internet access, collaboration and desktop management.

Chameleon Desktop 4.5 costs $400.

▶ *NetManage*
(408) 973-7171

Product short

Asante Technologies, Inc. has introduced AsanteFast 100Base-TX Peripheral Component Interconnect (PCI) cards and AsanteFast 100Base-TX Fast Ethernet Hub. Cost: $269 for the PCI cards and $1,995 for the hub. Asante, San Jose, Calif. (408) 435-8388.

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And as the chart below* shows, unlike its leading competitor, Oracle7, new DB2 Parallel Edition has *all vital functions* performed in parallel – which gives it a huge advantage in speed and scalability.

Parallel Function	*Oracle Parallel Query Option Version 7.1.3*	*IBM DB2 Parallel Edition Version 1.0*
Optimized for Parallel	No	Yes
Consistent Architecture with SP2	No	Yes
Index Scan	No	Yes
Inserts	No	Yes
Selects	Yes	Yes
Updates	No	Yes
Deletes	No	Yes

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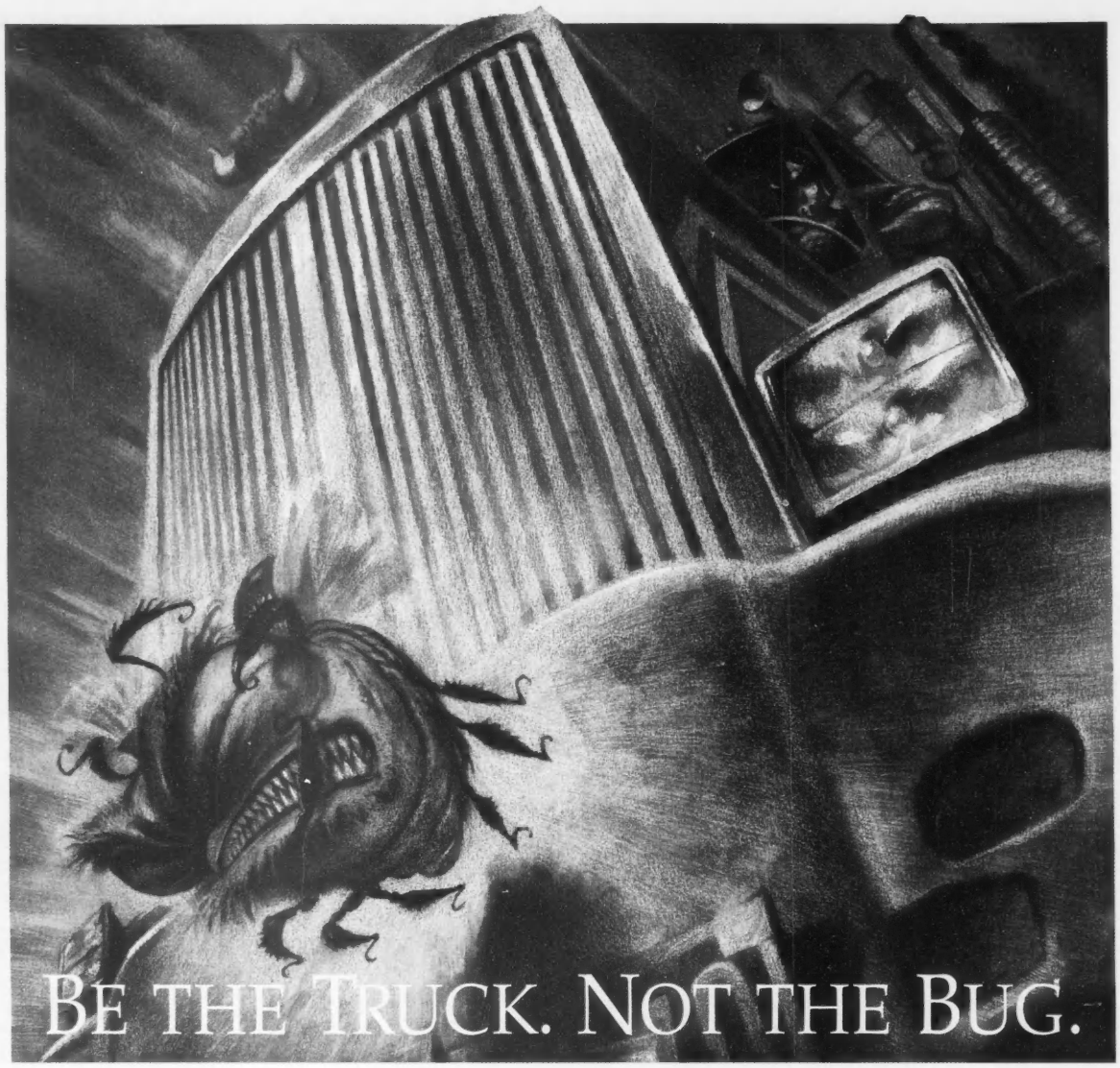

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AS/400

Software revamp sets stage

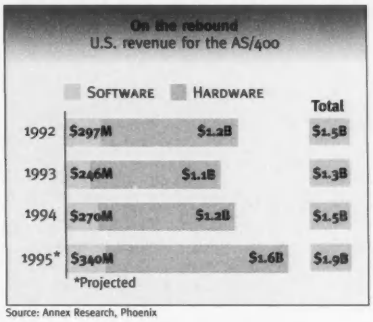
By Craig Stedman

The AS/400 has finally made the leap across the great divide between the traditional host past and what IBM hopes will be its client/server future.

The planned transformation of the venerable midrange system into a PowerPC-based RISC platform is still to come in the second half of this year. But the equally important reinvention of the AS/400's operating system is finally complete, and that gives users their first real chance to test IBM's client/server promises.

Version 3 Release 1 (V3R1) of the OS/400 software was a long time in coming. IBM first detailed plans for the operating system in September 1993 and had hoped to ship it last year. But several key pieces were delayed, and the full package just became available in mid-February.

IBM added or altered nearly 4 million lines of code in its attempt to modernize the OS/400 — the most changes since the first release in 1988. Among the key pieces overhauled were the integrated DB2/400 database, the AS/400's PC connectivity software, its TCP/IP implementation and its application development tools. New features include an internal file server and support for Unix application programming interfaces and data formats.



Source: Annex Research, Phoenix

No rush

With that much change going on at once, users are not exactly pushing one another out of the way to be first in the V3R1 line.

"Putting it on our systems is trivial. It's living with it that takes some gumption," said Marc Cohn, senior vice president of information systems at Enterprise Rent A Car Co. in St. Louis. "Because we're at the high end of the performance curve, we'd just as soon let it settle down a little longer."

Promised improvements in program-to-program communications should speed up development by allowing applications to be written in modules instead of monolithic chunks. And the addition of stored procedures in DB2/400 "could minimize the amount of code we have to write by about one-third," Cohn said. Enterprise Rent A Car may be ready to dip its toes in the water by May, he added.

Several other users interviewed recently said they are taking the same cautious approach, in part because of concerns about the potential for performance hits on their systems.

Norwood Promotional Products, Inc. lost "quite a bit" of performance when it first brought up V3R1 on an older Model D60, said David Ferrell, manager of MIS at the San Antonio maker of promotional gift items.

The company was in the process of upgrading to a new AS/400 Advanced Series system anyway, and performance is no longer an issue, Ferrell said. "But if you're already pressed, [V3R1] may be disruptive. I don't know if I would have [implemented it] if I was going to stay on the D60."

Glenn Van Benschoten, director of systems product management at IBM's AS/400 Division in Rochester, Minn., said most customers should not suffer any performance losses because of V3R1. But he acknowledged there may be "special combinations or configurations" that result in slowdowns.

Despite the wariness, interest in V3R1 is high, and the operating system's ability to live up to its advance billing will go a long way in determining whether some companies stay with the AS/400 or move more toward Unix systems.

One of the leading indicators will be whether IBM can attract Unix software vendors to port their applications to the AS/400, said George Cain, director of technical services at Reynolds Metals, Inc. in Richmond, Va. Reynolds is a longtime IBM midrange shop, but it has had to put Unix systems at some of its plants in the past five years to get the software it needed, he said.

"The applications that users want today aren't on the AS/400," Cain said. He added that IBM's embrace of a subset of the Unix-oriented Spec 1170 programming interfaces in V3R1 "is all well and good, but if the vendors decide not to port, it's not going to matter."

Some client/server developers have announced plans for AS/400 ports, most recently SAP AG for its fast-selling R/3 applications suite. But there has not been a groundswell of support, said former AS/400 Division marketing official Thomas Bittman, now an analyst at Gartner Group, Inc. in Stamford, Conn. V3R1 "really is a watershed" product for the AS/400, he added.

Slow ride

Although some shops have already installed the new version of the OS/400, analysts do not expect it to have a major impact on users until late this year or next year.

For now, due to a lack of packaged applications, V3R1 is limited to "the adventuresome or people who want a specific feature," said David Andrews, managing partner at D. H. Andrews Group, Inc., a consultancy in Cheshire, Conn.

Glenn Van Benschoten, director of systems product management at IBM's AS/400 Division, acknowledged that adoption of V3R1 is running "at a moderate pace." But he said IBM expects more than 30% of the 300,000-system installed base to upgrade to the new software this year — a target analysts do not find unrealistic.

S. C. Johnson & Son, Inc. in Racine, Wis., started using V3R1 in late December after an initial batch of code was shipped minus the features that were delayed until February. The maker of consumer and industrial waxes and cleaners encountered some early bugs, "but IBM fixed them quickly, and it's solid now," said Jeff Koepke, IS manager at S. C. Johnson's Worldwide Professional division.

Koepke is developing a data warehousing application based on the revamped DB2/400. Its faster SQL querying performance and new features such as stored procedures and triggers finally puts DB2/400 "on a comparable level" with Unix databases, he said. "Those things definitely were needed from a client/server standpoint."

Reynolds Metals has been running V3R1 on a development system since late February and plans to start installing the software on its four production AS/400s later this month, according to George Cain, director of technical services. The company is particularly interested in the faster TCP/IP implementation and the new Windows-based Client Access/400 desktop connectivity software, he added. — *Craig Stedman*

What's happening

Key pieces of the new version of OS/400 include the following:

- **DB2/400:** Renamed version of integrated relational database with improved SQL query performance and new features such as triggers, stored procedures and two-phase commit. Supports industry standard SQL used in IBM's other DB2 databases, plus Microsoft Corp.'s Open Database Connectivity specification.
- **TCP/IP:** Newly integrated within OS/400 and rewritten to improve performance by up to eight times. Implementation of Advanced Program-to-Program Communications protocol also rewritten for threefold boost in throughput.
- **File Server I/O Processor:** Support for new 486-based board that off-loads file serving from the main AS/400 processors, providing performance increases of up to eight times. Runs IBM's LAN Server software; support for Notes and Novell, Inc.'s NetWare is due later this year.
- **Client Access/400:** Renamed and rewritten version of IBM's PC connectivity software with three times the speed, a graphical user interface and support for open programming interfaces.
- **Visual RPG and Integrated Language Environment:** New application development tools supporting visual programming and development of modular applications based on multiple small programs.
- **Integrated File System:** New Posix-like file system that supports hierarchical directories and AS/400, Unix and PC data formats. Also conforms to a subset of the Unix-oriented Spec 1170 application programming interfaces.

— *Craig Stedman*

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Naval command sails to client/server

By Gary H. Anthes
ARLINGTON, VA.

The U.S. Naval Sea Systems Command (Navsea) is steaming full speed ahead into client/server waters, and 26 mainframes are walking the plank.

Navsea is also throwing to the sharks dozens of minicomputers running proprietary operating systems and taking on board workstations, servers, database management systems and networks built to open system standards.

Navsea is halfway through a five-year, $131 million information systems modernization project and is laying down an infrastructure that it says will reduce IS costs by $81 million a year.

"My boss said to me, 'Figure out how to reduce the information technology budget by 25%,'" said John Rivers, manager of the Navsea Information Management Improvement Program. "We had to reduce unit costs. If we were delivering a function for $1, we had to deliver it for 75 cents. Those were our marching orders."

It actually was a little more complicated than that. The orders also said that the ability of the $20 billion command to meet its mission — designing, building and maintaining ships and ships' weapons — was not to be diminished in any way. "Our mission actually was getting more complex," Rivers said. "Instead of one enemy, the Soviet Union, we had multiple enemies to worry about."

KATHERINE LAMBERT

Project manager John Rivers: *'If we were delivering a function for $1, we had to deliver it for 75 cents. Those were our marching orders.'*

Changing of the guard

From a shipyard in Bremerton, Wash., to the Naval Surface Warfare Center in Panama City, Fla., machines from Unisys Corp., Data General Corp., Honeywell, Inc. and Control Data Corp. are giving way to client/server LANs populated by Sun Microsystems, Inc. and Hewlett-Packard Co. servers and PC/Macintosh clients.

The HP boxes run database management systems from Oracle Corp., and the Sun machines are fitted with DBMSs from Sybase, Inc. The LANs run Banyan Systems, Inc.'s Vines or Novell, Inc.'s NetWare.

And just as a client/server LAN distributes processing to users on it, Navsea is extending that concept across the country with a high-speed data network that allows highly distributed users to access centralized applications (see story at left). "It's an enterprise network as an extension to a computer," said Robert Johnson, deputy program manager. "We're building a [network] infrastructure to run computer applications."

New attitudes

The biggest challenge in the megaproject has not been dealing with the technology but persuading users and technicians to adopt new ways of thinking about computing, Johnson said. "Some people have dug in and refused," he said. "Some mainframes are still sitting out there acting as great big printers."

Nevertheless, the move to open systems has proved itself, Rivers said. "We've shown that standards, although not perfect, do work." He said that while it might take eight months to move an application from a Honeywell mainframe to the Sun/Oracle environment, that same application could be ported from Sun/Oracle to HP/Sybase in a couple of weeks.

"We've also shown that in this environment, the move to graphical user interfaces or Windows interfaces is a lot easier, and managers really want that now," Rivers said.

Another success factor has been Navsea's use of two pre-existing U.S. Department of Defense umbrella contracts, Rivers said. Those contracts allow the command to bring in hardware in three to four months rather than the one to two years it would take to contract separately, Rivers said.

Coast to coast

Navsea's modernization program includes establishing a nationwide Asynchronous Transfer Mode network backbone intended to give the command "bandwidth on demand." Users have direct connections to the backbone at hubs in Seattle, San Diego, Washington and Norfolk, Va. Elsewhere, users connect via T1 or T3 lines.

The AT&T Corp. network replaces a tangled web of point-to-point lines, each put in to serve some unique combination of user and application, said Robert Johnson, deputy program manager. "We plotted them on a map, and there were so many you couldn't see anything but Kansas and Arkansas," he said.

Johnson said a given amount of bandwidth is now half its previous cost, and individual sites are seeing far lower costs in total because the hubs and backbone allow circuits to have multiple terminations.

Johnson said the network simplifies software maintenance because remote users can access centralized applications and do not need their own copies. "We used to kill ourselves keeping all the versions the same," he said.

"The [system] infrastructure allows us to use and manage our technical data wisely by reducing the need for a complete repository at every user site," said Rose DiGeronimo, branch head for Engineering Drawing and Specifications. "We now can have user sites that require smaller volumes of data access the repository remotely."

Network users include major contractors and most of Navsea's 85,000 employees. Eventually sailors at sea will be included.

— Gary H. Anthes

Debugged suite puts Platinum back on track

By Rosemary Cafasso

Platinum Software Corp. is receiving a badly needed boost from users who are giving passing marks to the latest release of its client/server financial software.

Users said Platinum's SQL Enterprise software, its high-end financial applications suite, has had some bugs, but overall, it is a big improvement over the previous release.

"We've seen a few little bugs. We've had a couple weird messages, [but] we haven't had any major problems," said Jimmy McDonald, assistant controller at Cogen Technologies, a Houston utility company.

This user feedback is critical to Platinum in Irvine, Calif., which has spent the past year reorganizing and trying to pick up the pieces after the disastrous financial fallout of 1994. This downslide stemmed in part from improper revenue bookings, which forced the company to restate revenue for several quarters.

Strategic switch

As part of its reorganization, Platinum killed its plans to move beyond the accounting software market and restructured its financial product line into three segments to better target different groups of users. Platinum also set a goal to ship a new high-end software version as an upgrade to the version on the market, SQL to Platinum, which company officials had acknowledged was too buggy. The renamed high end, SQL Enterprise, began shipping this year.

The company officially launched the scaled-down product line last month. It includes SQL Enterprise, which began shipping earlier in the year. The midrange offering, SQL NT, is scheduled for general availability in June, while the low-end Platinum for Windows will ship later in the year.

"They have serious work ahead that will take some time," said Ed Black, an analyst at Aberdeen Group in Boston. "If they can deliver what they said they will deliver, that will be the important thing."

So far, several users of SQL Enterprise are reporting experiences similar to those of Cogen Technologies: an expected amount of bugs for a new release but great improvement from the last time around.

Clark USA in St. Louis shifted into production mode with SQL Enterprise in February. Overall, "performance is pretty good," said Susan Rhoades, a senior analyst programmer. However, there have-

Platinum, *page 76*

Platinum's three tiers

	Operating system supported	Database supported	Target market	Price
SQL Enterprise	OS/2, Windows NT, Unix	Sybase, Microsoft SQL Server	High-end users requiring customization	$50,000 per module
SQL NT	Windows NT	Microsoft SQL Server	Midrange users who are more price sensitive than high-end users	$10,000 per module
Platinum for Windows	Windows	Btrieve	Low-end accounting system for small to medium-size businesses	$1,500 per module

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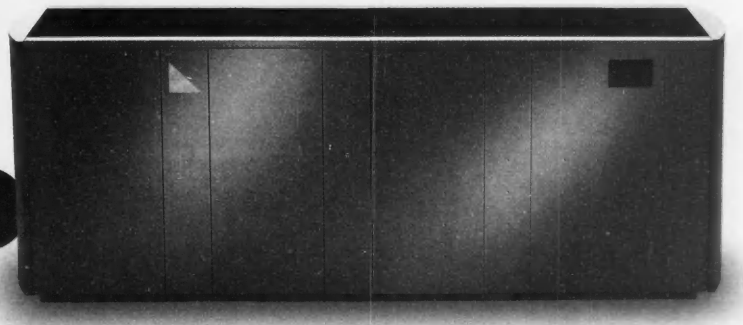

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TapeWorks L.P. has announced the MiniChanger 400 Series of autoloaders for digital data storage (DDS) tape drives.

According to the Fort Collins, Colo., company, the MiniChanger 400 Series allows users to automate the backup process and increase storage capacity by up to eight times. It also has drive and capacity upgradability.

The MiniCharger 400 Series conforms to the 5¼-in. internal form factor and supports SCSI. It is supported by most major backup software applications.

The MC400S costs $2,995 and includes a DDS-2 tape drive.

▶ *TapeWorks*
(303) 224-1700

TSI International has announced Trading Partner 2.4, an electronic data interchange (EDI) management system for IBM's Multiple Virtual Storage (MVS) systems.

According to the Wilton, Conn., company, Trading Partner 2.4 processes and manages EDI data with enhanced security and audit features.

The product also includes a Power Pack feature designed to deliver enhanced processing performance in a high-volume and real-time EDI environment.

Trading Partner is intended for use in MVS environments that need to integrate EDI with user applications. Markets with typically complex transaction sets and high volume, such as insurance, health care and communications, would also find use for the product.

Pricing for Trading Partner 2.4 starts at $30,000.

▶ *TSI International*
(203) 761-8600

Pixel Science, Inc. announced QuickImage 3.22 AS/400 for Windows.

According to the Great Neck, N.Y., company, QuickImage 3.22 links visual imaging to AS/400 database applications and retrieves the images on any PC running Windows and an IBM InfoWindow II Image/Fax monitor.

Functions on QuickImage 3.22 allow archiving of an image's index file, vector-to-raster image file conversion and image overlay.

Pricing for QuickImage 3.22 starts at $2,700.

▶ *Pixel Science*
(516) 773-7377

Forest Computer, Inc. has announced the Forest High-Function Gateway for Novell, Inc.'s NetWare networks.

According to the Okemos, Mich., company, the gateway allows NetWare clients to initiate terminal sessions over IPX and eliminates the need for multiple protocol stacks in client PCs.

The Forest Gateway interconnects NetWare networks with IBM's AS/400 systems and mainframe networks, Digital Equipment Corp.'s VAX and Alpha systems and Unix hosts.

Pricing for the Forest High-Function Gateway for NetWare networks starts at $17,500.

▶ *Forest Computer*
(517) 349-4700

Executive Software, Inc. has announced I/O Express 2.3, automatic data caching software.

I/O Express 2.3 runs in mixed VMS clusters containing both Digital Equipment Corp.'s VAX and Alpha AXP systems.

According to the Glendale, Calif., company, I/O Express 2.3 provides enhanced caching performance in caching Phase II shadow sets along with on-line documentation. It also includes an AXP write-only driver running on Alpha AXP members of the VMS cluster.

Pricing begins at $480.

▶ *Executive Software*
(818) 547-2050

LanOptics, Inc. recently announced StackNetPro, a family of stackable hubs featuring a modular architecture to support Ethernet, Token Ring, IBM's AS/400 and 3270 connectivity.

According to the Dallas company, StackNetPro improves network fault tolerance with a hot-swap feature that ensures system uptime by eliminating the need to bring down the network in case of primary unit failure. The modular architecture simplifies inventory and spare parts requirements.

Pricing for StackNetPro begins at $67 per managed Ethernet port and $103 per managed Token Ring port.

▶ *LanOptics*
(214) 392-0647

Raptor Systems, Inc. has announced Eagle Lite 1.0 and Eagle Remote, Internet security software.

According to the Waltham, Mass., firm, Eagle Lite 1.0 provides real-time suspicious activity monitoring and detention and alarm and reporting capabilities.

Eagle Remote is an add-on to Raptor's Eagle Enterprise software. It provides one Eaglet subnet license to manage interdepartmental networks, security across multiple Internet sites and gopher and Mosaic support.

Prices for Eagle Lite 1.0 range from $7,500 to $12,500, depending on the number of users. Eagle Remote costs $17,500.

▶ *Raptor Systems*
(617) 487-7700

Product short

I/Net, Inc. has announced The I/Net Web Server/400, which will provide access to the World-Wide Web for IBM's AS/400 computers. Cost: $1,250 per machine. I/Net, Kalamazoo, Mich. (616) 344-3017.

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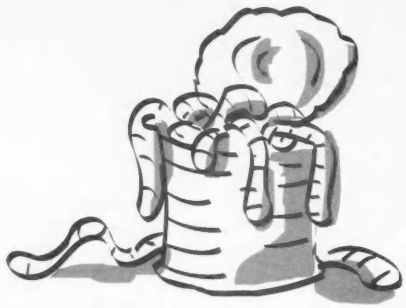

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Briefs

Bell group adds center

Bell Atlantic Business Systems Services, a third-party provider of help desk and telephone-based customer services, has opened a third U.S. support center. The facility in Austin, Texas, is staffed by 300 employees. The company estimates the staff will handle 50,000 calls weekly by year's end. The other centers are in Great Valley, Pa., and Minneapolis.

Digital promotes manager

Longtime **Digital Equipment Corp.** employee Sultan Zia has been promoted to vice president of the Video Interactive Information Services business, reporting to William Strecker, vice president of the Advanced Technology Group and chief technical officer. Zia, 53, has managed the start-up since its inception last year.

Platinum

CONTINUED FROM PAGE 73

been some glitches with the reporting tool, FRX, she said.

Last week, Kevin Dowling, Platinum's vice president of marketing, confirmed that work remains to be done on Platinum FRX, which is a new component in the financial suite. Platinum, which purchased the report generator technology from FRX Corp. last year, continues to tailor the software so it is optimized for Platinum applications and the Sybase, Inc. database management system, said Tim McMullen, Platinum's chief technology officer.

"Some little thing will probably come up when we go into production, but it is essentially bug-free now," said Michael Huitt, manager of financial systems administration at Tesoro Petroleum Co. in San Antonio. Tesoro encountered a few minor software bugs in early testing but has scheduled an April 27 switch to SQL Enterprise.

"I think this is a real quality release," Huitt said.

Also, specific problems in SQL Enterprise are being worked out, users said. For example, Terry Tung, a senior information systems manager at Morrison-Knudsen in Cleveland, had been at odds with Platinum last month over performance problems he was having with SQL Enterprise. By last week, Tung said he and Platinum were working together to fix the problems, which appeared to be database-related.

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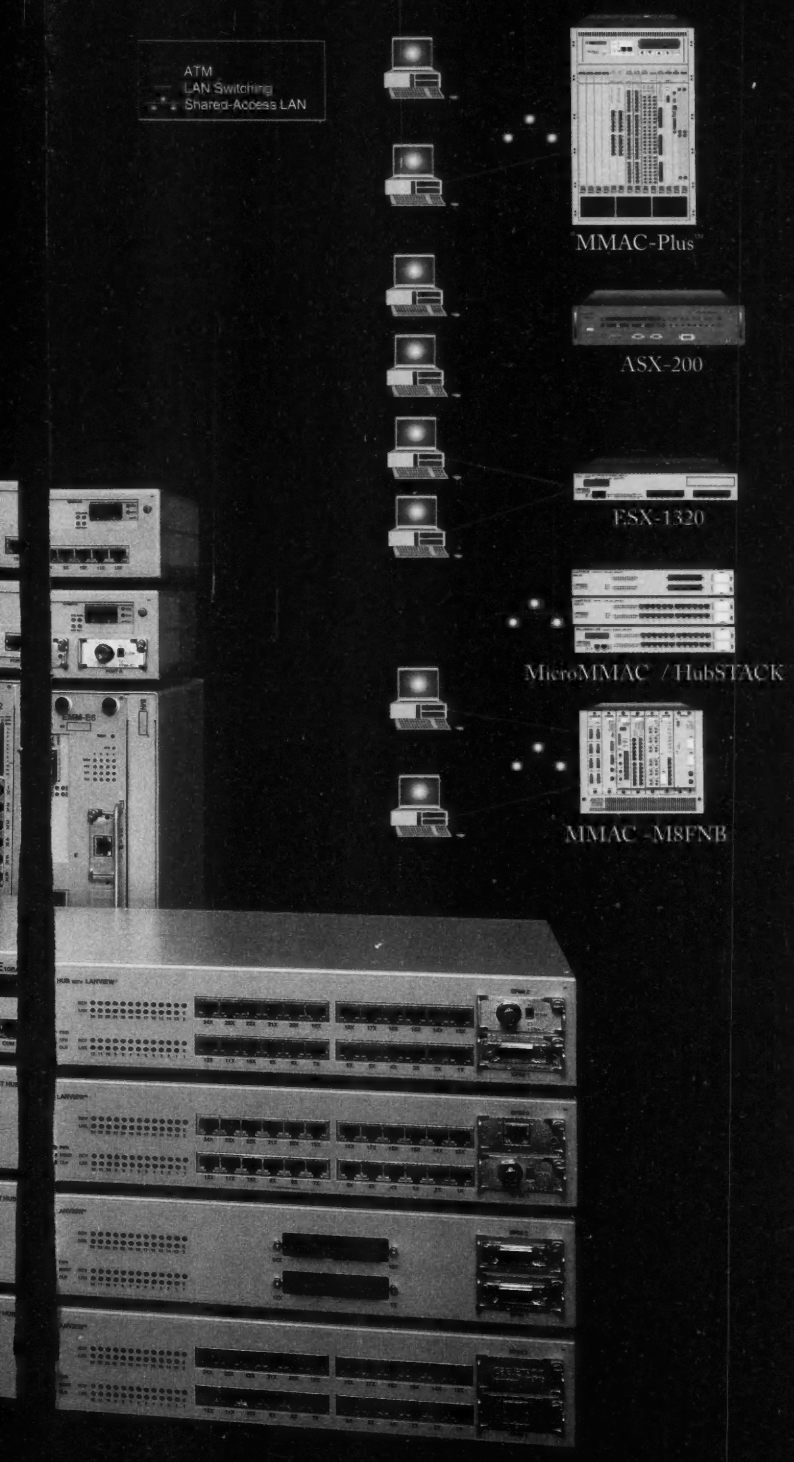

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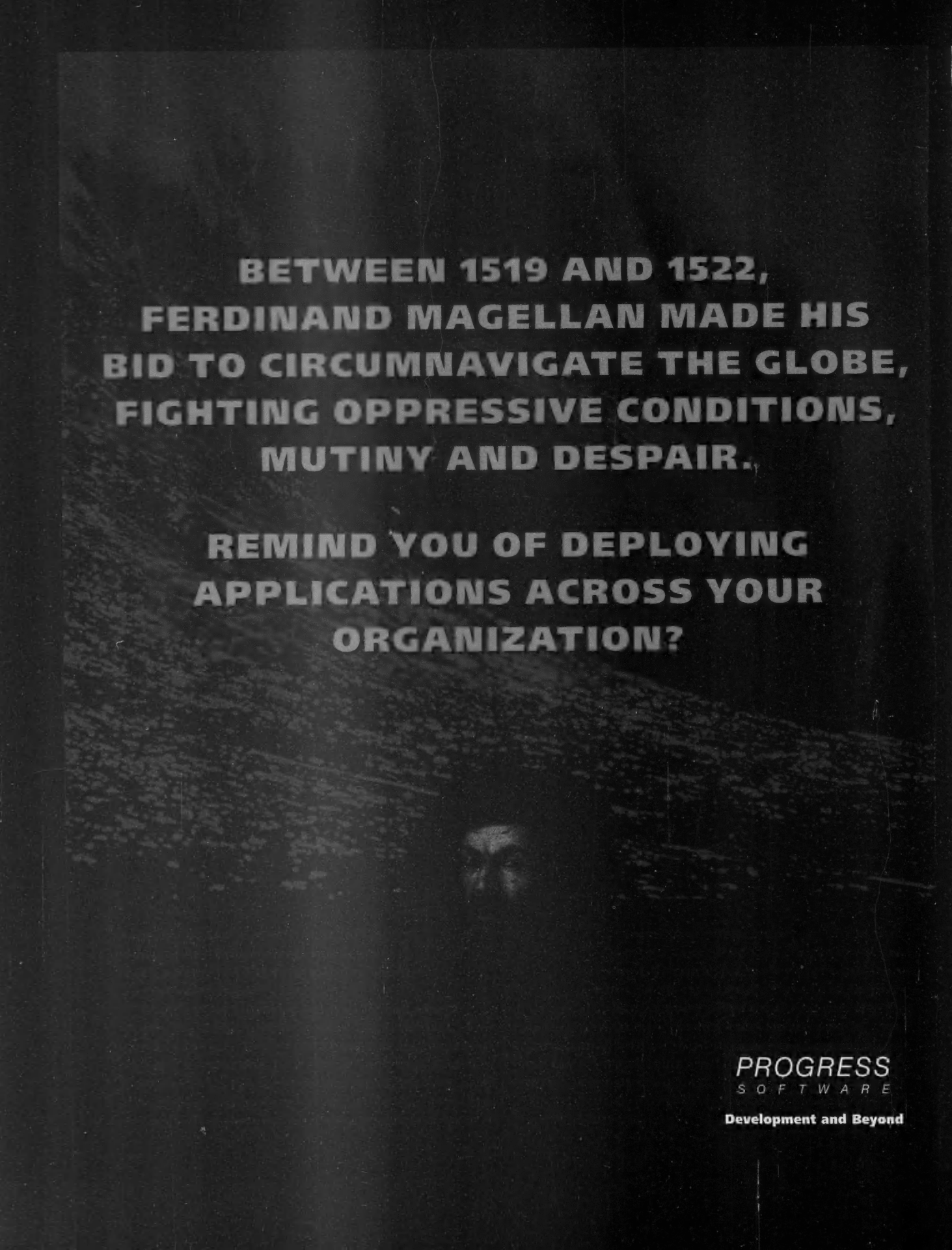
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Development and Beyond

Reusable code successful in small doses

By Elizabeth Heichler

One of the most often-touted benefits of object-oriented development is how much easier it becomes to reuse code, saving both time and money. For that to be true, however, the circumstances have to be right, users said.

Companies gaining some experience with code reuse are finding that realizing the benefits depends on planning, setting standards and changing corporate culture to reward reuse by developers. Even so, success is more likely in small groups and within application niches than on a corporatewide level, according to developers and information systems executives at several companies interviewed recently.

Bite-size success

"What's worked the best have been bottom-up efforts. That's where there have been small to moderate amounts of success. Large corporate efforts have not made a lot of progress," said Burt Rubenstein, vice president of technology at Cambridge Technology Partners, Inc., a software development services company in Cambridge, Mass.

Achieving broad reuse on an enterprisewide scale can be more difficult than in small groups. "Within small application groups, we're having success, but it's difficult to get different groups in a huge corporation to work together," said Dave Linthicum, technical director of systems and computer services at Mobil Corp. in Fairfax, Va.

A big obstacle to corporatewide reuse — and one of the reasons Mobil has yet to make a corporatewide commitment to object-oriented technology — is the lack of industry standards, said Joe Iwanski, senior technical adviser in the company's planning and technology unit. Groups using different object-oriented tools, such as different compilers with their associated class libraries, are not able to share objects, Iwanski explained.

Chemical Banking Corp. is working to create a more formal strategy to foster reuse across the company, according to Mike Yudkin, vice president of corporate systems and architectures at the New York financial institution.

Part of that effort involves setting common naming standards for objects, but it also includes sharing development repositories across the company. "We're establishing a reuse capability by establishing a set of easily accessible repositories on the LAN," Yudkin said.

Chemical Bank has seen an "orders of magnitude" productivity gain from reuse in some areas and wants to do more. Yudkin would like to see the bank establish a group that focuses on reuse and quality assurance of code and related documentation, he said.

Musts for code reuse

1. Use configuration management tools to avoid version mismatches and code incompatibilities – and to support rigorous maintenance of your reusable code base.
2. Agree on an organizationwide common design notation.
3. Set companywide coding standards: common language, coding guidelines, interface standards, naming conventions, etc.

Source: Cambridge Technology Partners, Inc., Cambridge, Mass.

Cambridge Technology Partners has established a dedicated reuse group that supports all project teams across the company. The group's responsibilities include building objects that may be needed for a specific project but that could also be used companywide. The group also reviews objects or components that have been built for specific uses but that could be used elsewhere, Rubenstein explained.

In addition, every project at the software services firm now has a reuse plan that analyzes existing components to see if they can be used on the project and that determines if new components being built can be exported to other projects.

Tools and standards are needed to provide the logistics to support reuse (see chart). However, Rubenstein noted, these can fall short — in particular, Cambridge Technology Partners has not yet found an appropriate repository, he said.

Get with the program

Managers hoping to encourage reuse must also provide incentives and performance measures that counter an engineering culture that values new, original solutions to problems and disdains plagiarism and copying, developers said.

At Mobil, project managers using object-oriented technology review development efforts using metrics that measure how efficiently programs are constructed and how many components have been reused, Linthicum said.

Because this is tied into their performance evaluations, programmers and developers are rewarded for achieving higher levels of reuse.

Database-to-database conversation still garbled

By Kim S. Nash

Users must sort through a confusing bunch of options to get different databases to talk to one another.

Consider a common scenario: A user wants to link a Unix relational database, such as Oracle Corp.'s product, to IBM's DB2 mainframe database. At least three — and probably many more — choices exist for connecting the two systems, but they do not provide equal performance or reliability.

To find good answers to database connectivity questions, users should focus on the type of data to be exchanged as well as the function and desired speed of the application that demands database connectivity, users and analysts said (see chart).

Users should also understand the different categories of linkages:

- **Native network drivers** are software products specifically designed to connect an application to a given database. Conventional wisdom says if an application needs to talk to just one brand of database at a time, then native drivers can provide fast performance compared with other types of links. Informix Software, Inc.'s I-Net, Sybase, Inc.'s NetGateway and Oracle's SQLNet 2.0 fit that bill.
- **Gateways** that support Microsoft Corp.'s Open Database Connectivity (ODBC) have become popular because they theoretically allow users to communicate with any product that supports ODBC. However, debate continues as to whether ODBC slows database performance. Brooklyn Union Gas, a New York utility, and other users have foresworn ODBC in favor of direct drivers.

Eenie, meenie ...

These rules of thumb can help you decide which type of database connector to use

If you need ...	Use ...
Simple, database-to-database communication over a network	Gateways
Heterogeneous database joins or moderate performance	Middleware
Simple communication among smaller applications	Native drivers
Near real-time data exchange	Replication

Meanwhile, connecting to an IBM database requires a gateway that supports IBM's own Distributed Relational Database Architecture (DRDA) specification. Informix was among the earlier supporters of DRDA, with Informix-Gateway with DRDA for IBM's midrange AS/400 machines.

- **Middleware** is more complicated than drivers or gateways. In essence, middleware products, such as Information Builders, Inc.'s EDA/SQL, are a weigh station of sorts where data is transmitted, reformatted and sent on again between host databases and PC end users.
- **Replication**, where two or more databases are in sync via regular copying, updating and reconciling of conflicts with data, comes in a few different flavors. A routine method calls for one database to be a "master" and maintain the truest, most up-to-date copy of a company's data. Other databases on the network are then "slaves." That is, they receive copies of information controlled by a designated master.

Users who want to replicate information between databases from different vendors have only recently seen options expand. For example, DB2 support in Sybase's Replication Server shipped early this year. Oracle last week announced several enhancements to its replicator technology, including so-called "update anywhere" functions designed to let any database act as a master or slave.

Informix's OnLine database lacks some of the features of Sybase Replication Server and other products, but it is suitable for creating backup copies of corporate databases, said Bill Kulles, a database administrator in Greenbelt, Md.

Unix weighs in

During the next year to 18 months, the major Unix database players are expected to round out their respective links to offer at least some products in each of the key categories, according to Mike Forster, president of Sybase, Inc.'s MDI interoperability unit in Boulder, Colo.

MDI, formerly known as Micro Decisionware, Inc., has doubled the number of employees devoted to database connectivity in the past year, Forster said. The company has also stepped up work on certifying which PC applications work well with MDI's gateways, replicators and other database communication packages; the company has certified 125 tools from 70 vendors, he said.

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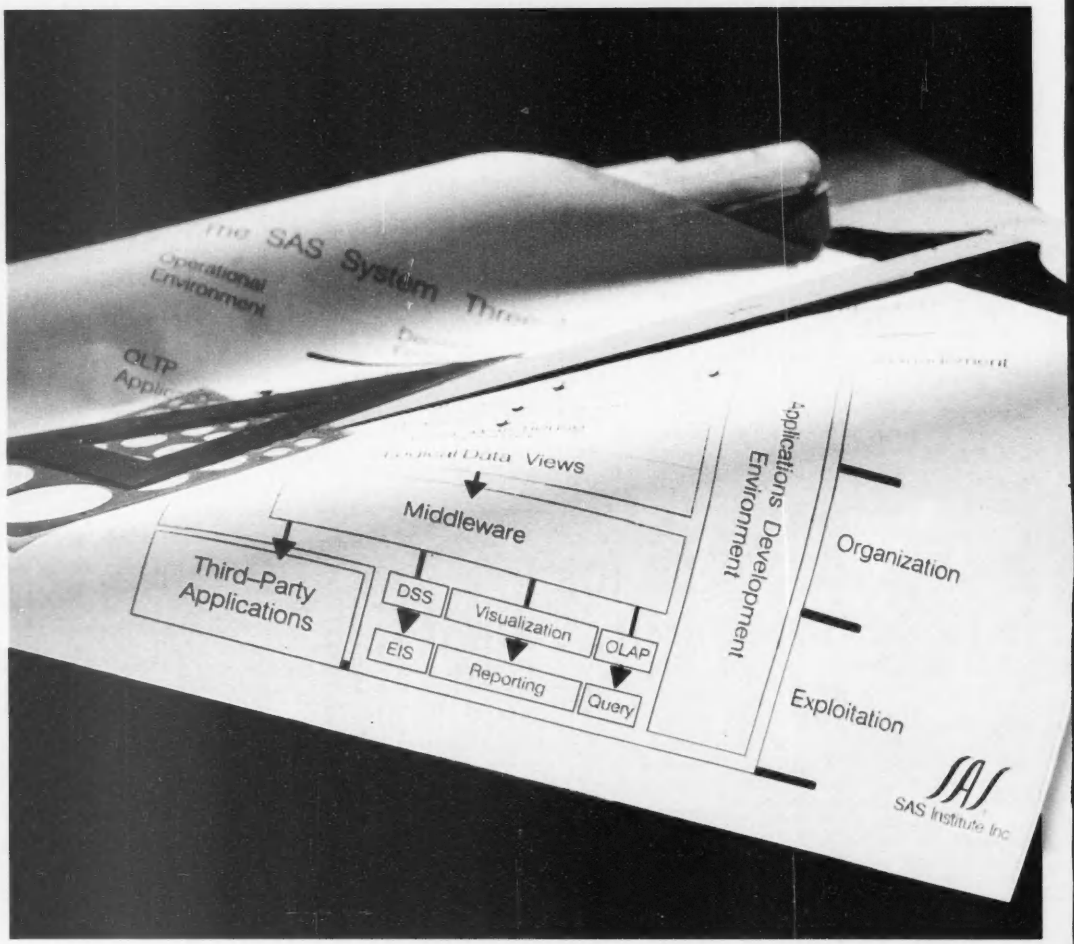

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IBM centers help users test multivendor open systems

By Jean S. Bozman
ROANOKE, TEXAS

Users who stop into IBM's Open Systems Center here say their stay in the prototyping laboratory has saved them money by cutting their learning curve down to size.

It can take many months, if not years, to build up a working knowledge of client/server systems and how to re-engineer mainframe applications, users said. But working directly with IBM software engineers and accessing IBM's Advisor database, which catalogs client/server migration scenarios, has moved things along.

MEMC Electronic Materials, Inc. a silicon wafer manufacturer in St. Peters, Mo., wanted to move to client/server quickly because unplugging its applications from a service bureau meant a savings of $80,000 a month, according to Ed Wehner, MEMC's manager of business information services.

The assist from the Open Systems Center meant bringing processing in-house much sooner, Wehner said. The Cobol code for 600 applications was modified to run on three IBM RS/6000 servers.

Much of that work was done while programmers worked in a rented space in the Open Systems Center, consulting with IBM software engineers. "We did most of the work, but they did a lot of consulting," Wehner said. The migration project began in March 1993 and was completed in May, he said.

IBM's Open Systems Centers

- Forty-two centers and 450 staffers in 34 countries worldwide; one center in North America (Dallas), 14 in Asia/Pacific, 11 in Latin America and 16 in Europe.
- Subset of IBM's 70 Client/Server centers, which have 4,000 staffers.
- The Dallas center handled 127 customer engagements in 1994, resulting in $147.7 million in revenue for IBM. Worldwide, IBM's Open Systems Centers handled 2,400 engagements in 1994.

Other firms have found quite different uses for the IBM center. Some sent programmers and network administrators to short-term classes, then brought their newly acquired client/server development techniques home. Some continue to consult with IBM on an ongoing basis, and some have even paid IBM to install their distributed systems on a contract basis.

Peter Stulginski, network manager at CommScope, Inc., a General Instruments division in Catawba, N.C., that manufactures coaxial cable for cable TV, needed to simplify client/server communications among PCs, Hewlett-Packard Co. Unix workstations and a central IBM AS/400. To do that, the AS/400's proprietary connections had to be changed to open systems Ethernet links, and the AS/400's OS/400 operating system had to be upgraded to support more PCs.

"They didn't do the whole thing, but they got us through the rough parts," Stulginski said. "We're up to speed now, and we're capable of doing the application locally." Four CommScope staffers stayed at the center for two weeks and then returned home to finish their development work.

Alco Capital Resource, a leasing firm in Macon, Ga., took the IBM center's advisory service one step further: It asked IBM to install the distributed systems once they had been designed and tested. Alco Capital employs just 17 people on its information systems staff. "I couldn't afford to have people with all the varying skills to tie together all these systems," said Daryl Hayes, director of IS.

The next step in the client/server overhaul, Hayes said, will be to install IBM's DB2 on the ES/9000 mainframe this summer and let local offices launch SQL queries against the central database.

The bottom line, users said, is that IBM found it had to learn how to support multiple hardware architectures to service its users' multivendor sites. In the process, it has learned what works, what does not and how to redesign legacy systems.

DAVID MARSHALL

"Ours is definitely a multivendor environment," Hayes said. The local leasing "dealerships" acquired by Alco all have their own system. Soon, client/server technology will pull Unix, PCs and the mainframe into one unified system. "We're re-engineering our system, and they're re-engineering theirs, and we're hoping to communicate when we're all done."

Steep learning curve for all

Like its user base, IBM is climbing its own learning curve when it comes to client/server technology and open systems. The firm has ramped up from two to 42 Open Systems Centers worldwide in the last 18 months and is not slowing down just yet.

The reason for the hurry, said Martin Clague, general manager of IBM's Worldwide Client/Server Computing group, is that user interest in tying together incompatible systems and re-engineering legacy mainframe systems, is accelerating. And IBM is trying to figure out how to support its largest global customers, all of which have multiple sites worldwide.

The Open Systems Center plan is to share knowledge built up during hundreds of user projects each year. The IBM Advisor system, based on OS/2 servers and Notes, documents various client/server and open systems scenarios and provides that data to IBM centers on-line.

Margaret Potter, manager of the Dallas Open Systems Center, said most users come in for a short consultation or work with IBM to develop a proof-of-concept application. But many also attend two-week classes on open systems networking techniques, she said. Rapid application development, object-oriented programming and user-friendly interfaces are often parts of the prototyping process. — *Jean S. Bozman*

Visual Basic gets workflow

By Tim Ouellette

Companies with Visual Basic applications can now add workflow functionality thanks to a development agreement announced at last week's Association for Information and Image Management trade show in San Francisco.

The pact ties Diamond Head Software, Inc.'s ImageBasic imaging development tool to Action Technologies, Inc.'s workflow software. The resulting product, called ImageBasic for ActionWorkflow, will let corporate developers write virtually any kind of Visual Basic application with workflow in it.

ImageBasic for ActionWorkflow will also let users speed up development time by using Visual Basic Custom Controls (VBX) for workflow development. Until now, users have had to work with special application programming interfaces (API) to get workflow into their applications.

For example, Leaseline Financial in Birmingham, Mich., developed an imaging system using Visual Basic and Diamond Head's ImageBasic a year and a half ago to speed up customer service and records access. They needed a workflow component but were unable to add one when they developed the application.

"We have been talking about adding a workflow system, but until recently, it wasn't available," said financial systems specialist Tony Greening, citing the high costs and long lead times to develop workflow.

The truck leasing firm, with $15 million in business and only 14 employees, must be highly automated, Greening said. He was interested in the workflow VBXs to improve the speed and cost of moving paper around the office. "We do all the workflow stuff by paper now," Greening said.

ImageBasic for ActionWorkflow comes with six VBX modules that support Action's workflow methodology. The controls let users include basic workflow features such as intelligent routing, automated review and approval, notification and workflow management.

Diamond Head in Honolulu and Action in Alameda, Calif., both needed to supplement their respective products, company spokesmen said. Diamond Head is known for its range of imaging VBXs, but it needed workflow to add more functionality to the final applications. Action was looking to simplify the development process, according to Bruce Silver, an analyst at Bruce Silver Associates in Weston, Mass.

Observers said there will be a ready market for ImageBasic for ActionWorkflow. "There is no one else in this area using VBXs to tie Visual Basic to another workflow piece," said Bill King, an analyst at BIS Strategic Decisions in Norwell, Mass. He said FileNet Corp. has APIs tying Visual Basic to its product, but ImageBasic for ActionWorkflow is more open.

ImageBasic for ActionWorkflow includes ActionWorkflow client and server libraries and six VBXs. It costs $13,890 for 10 users.

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PowerCerv has introduced PowerTool 3.2/4.0, an object class library for developers who use PowerBuilder from Powersoft, a unit of Sybase, Inc.

According to the Tampa, Fla., company, PowerTool 3.2/4.0 lets users create their own stored procedure update calls for Oracle Corp. and Sybase databases without relying on database administrators.

A tab object is modeled after Microsoft Corp.'s Word 6.0 Options dialog. Objects include functions, menus, windows and DataWindows.

PowerTool for PowerBuilder Enterprise costs $1,200 per developer. PowerTool for PowerBuilder desktop developers costs $249.

▶ *PowerCerv*
(813) 226-2378

Tektronix, Inc. recently rolled out two products for digital-system-embedded software development: LA-Browser and LA-Offline for Windows.

According to the Beaverton, Ore., company, LA-Browser lets software engineers debug problems with a logic analyzer at the C code level and assembly code level through synchronized windows. It also offers source level tracing of logic analyzer data.

LA-Offline for Windows lets engineers analyze data on their PCs while others on the network use the logic analyzer.

LA-Browser and LA-Offline cost $2,995 each.

▶ *Tektronix*
(503) 627-1438

Synon, Inc. has started shipping Synon/2 5.0, development tools for the IBM AS/400.

Synon/2 5.0 includes enhanced features in impact analysis, change control and function versioning.

According to the Larkspur, Calif., company, Synon/2 5.0 lets developers determine the impact of changing objects in the design model on other objects. It also allows developers to manage and distribute application changes at the design model level and maintain integrity with generated source and object code.

Pricing for Synon/2 5.0 starts at $48,000. A lease arrangement is also available starting at $14,000.

▶ *Synon*
(415) 461-5000

Axonix Corp. has introduced the CardStation Developer's Adapter Kit for integrators of portable computer systems and Industry Standard Architecture (ISA) card developers.

According to the Salt Lake City company, the CardStation kit makes it possible to migrate advanced ISA-based applications to PCMCIA-based portable computing environments.

The CardStation kit was designed for data acquisition, mass storage and imaging cards and network protocol analyzers unsuitable for PC cards. The kit functions as a test bed to determine whether an ISA card is compatible with Axonix's PCMCIA-to-ISA interface.

Pricing for CardStation Developer's Adapter Kit starts at $995.

▶ *Axonix*
(801) 521-9797

Numerical Algorithms Group, Inc. has introduced Iris Explorer 3.0, scientific visualization and application builder software for Silicon Graphics, Inc. workstations.

According to the Downers Grove, Ill., company, Iris Explorer 3 features scripts and visual drag-and-drop interfaces. It also allows the passing of geometry via shared memory.

Iris Explorer 3.0 is available in both hard copy and on-line versions.

Pricing for Iris Explorer 3.0 starts at $4,000 for the first four concurrent users.

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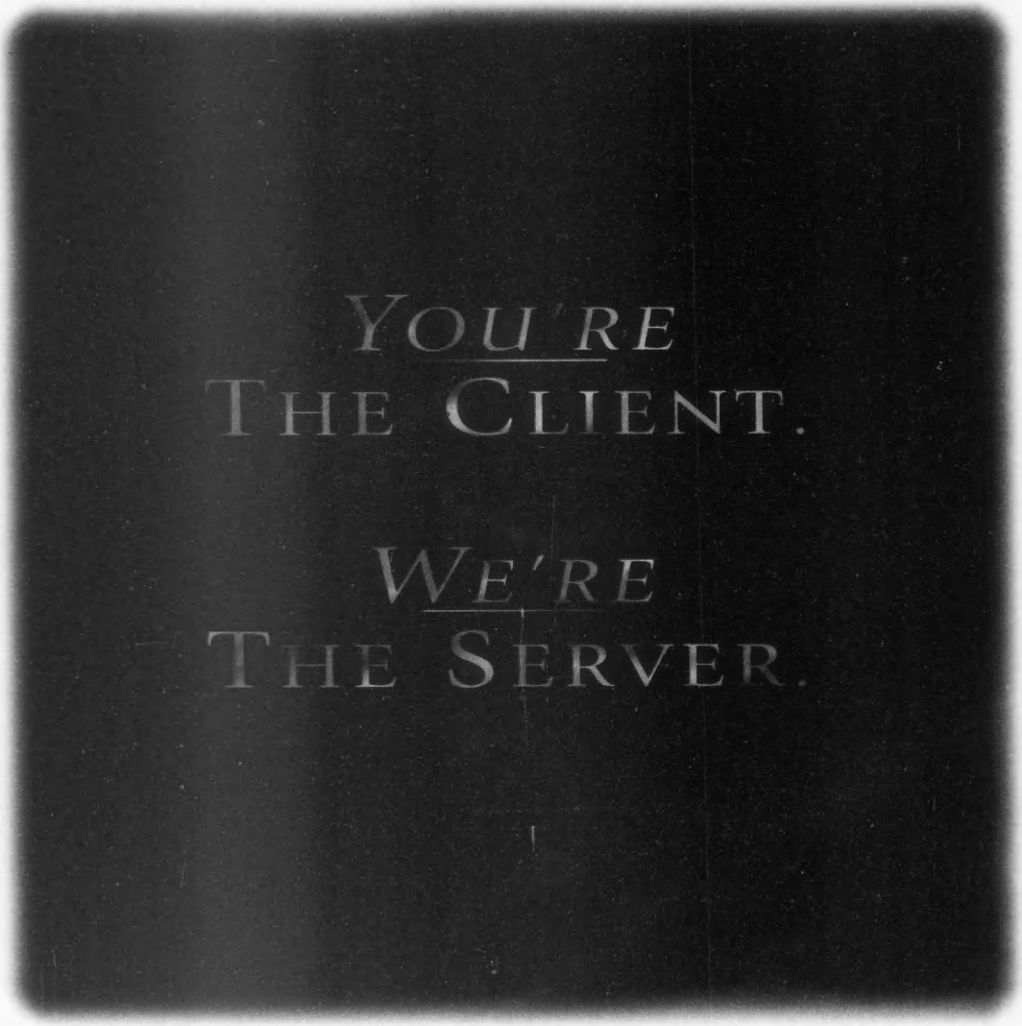

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INSIDE:
Intelligence files &
Calendar, page 101

SYSTEMS in the SLAMMER

America's prisons are undergoing their biggest expansion in history, and so is the use of technology in maintaining security and control. But don't expect to see the usual applications inside the big house.

By Alice LaPlante

CONTINUED FROM PAGE 1

the organizational keywords. Leading-edge technologies that are rarely deployed in corporate America, such as biometrics, and video imaging systems in conjunction with databases, are finding a ready home here due to the unique needs of correctional institutions.

"You're dealing with all sorts of strange situations. An inmate might go out for medical treatment and a look-alike brother might try and come back in. Or a friend comes in for a visit and an inmate tries to leave," says Stephen Haley, director of information systems for Corrections Corporation of America (CCA), a Nashville-based company that currently manages 22 prison facilities in the U.S. and Canada. "You have to be very careful to guard against the unexpected. Technology helps us do this."

And because of those same unique needs, there are some mainstream technologies that no warden in his right mind would install.

Last November, the U.S. Department of Justice announced a milestone of dubious distinction: America's prison population — state and federal combined — had just exceeded 1 million inmates.

Due at least in part to a growing get-tough-on-crime sentiment — President Clinton's $30.2 billion anticrime bill was the most prominent, but not the only, legislative manifestation — the business of incarceration has become big business indeed. A wave of new construction is ushering in the most rapid prison expansion in U.S. history.

This amounts to massive, profitable opportunities for private prison construction and management firms that understand the importance of technology in prison operations.

"There's tremendous market growth involving communications and control within these facilities," says Ed Wachter, vice president and general manager of systems integration at I-Net in Bethesda, Md. I-Net provides networking services to the federal government under a $12.4 million Bureau of Prisons contract it received in 1993.

"Technology comprises a critically important part of what we do," says Don Houston, vice president of programs at Wackenhut Corrections, a private correctional management firm in Coral Gables, Fla.

Wackenhut handles prison management from initial prison design to construction to

Slammer, *page 93*

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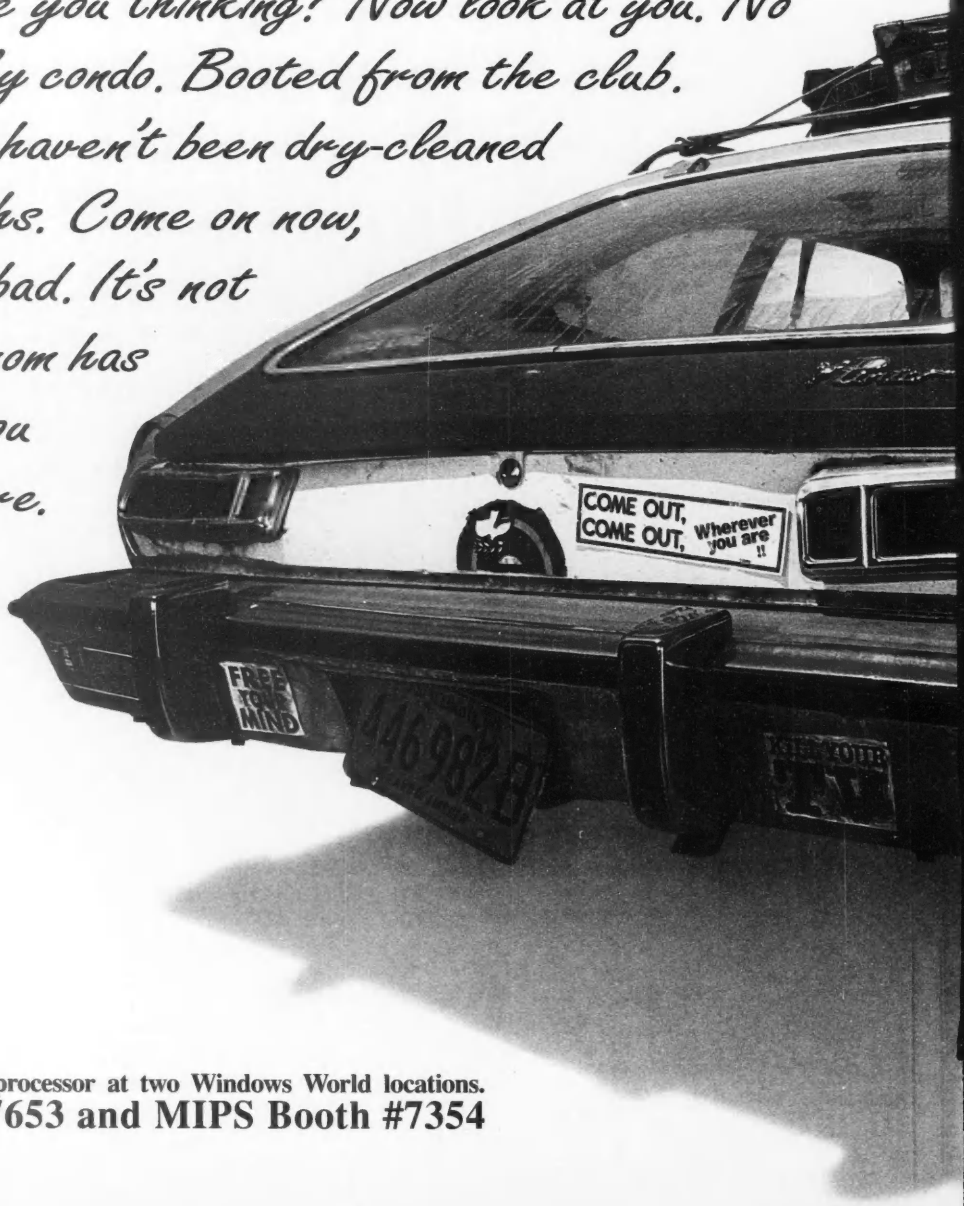

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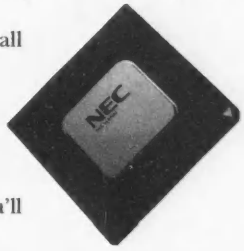

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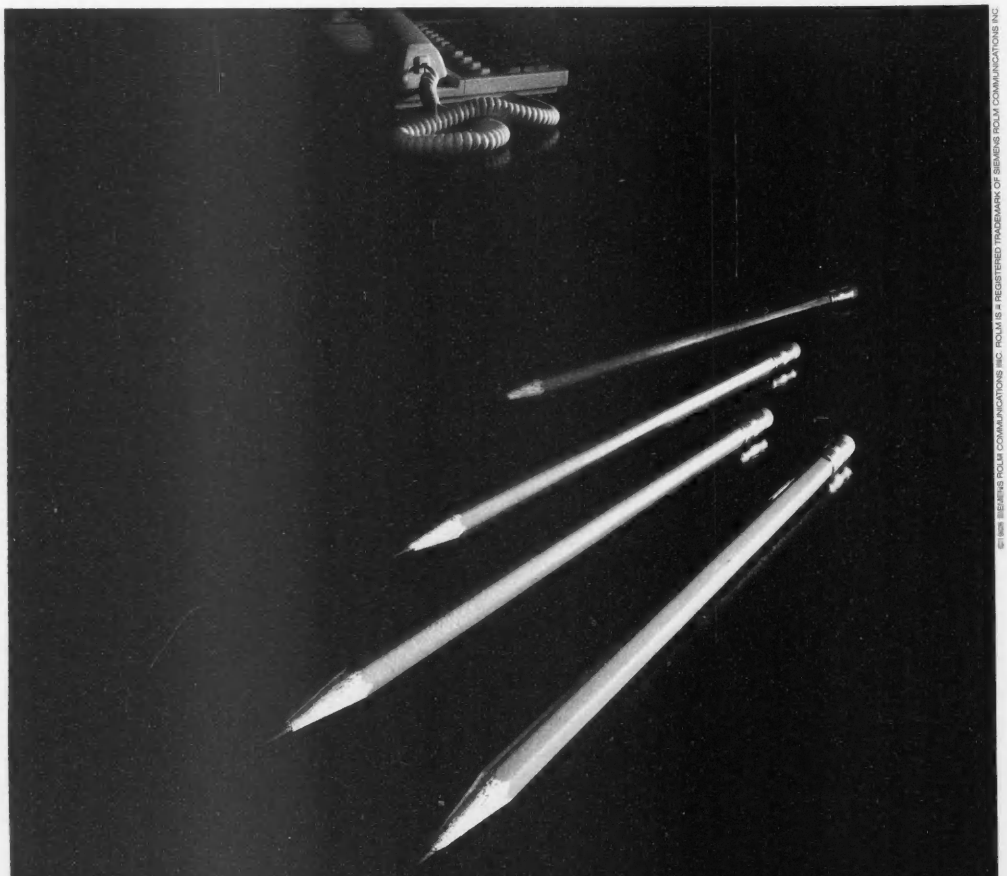

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SLAMMER

CONTINUED FROM PAGE 89

day-to-day management of inmates, facilities and technology.

"When we're bidding on a contract, our IS director sits at the bargaining table. It's that important a piece of the picture," Houston says.

Measuring the person

Take the biometrics technology being deployed in pilot projects at some facilities managed by CCA, the largest and fastest-growing private prison management firm in the country.

Biometrics is the science of measuring unique physical characteristics, and it is the basis for a new breed of prison security systems that use retina scanning, handprint scanning and voice-pattern monitoring.

CCA has integrated biometric hand scanning into LANs capable of carrying video imaging. The system allows the company to monitor both visitor and employee access at some of the higher-traffic prisons.

"We absolutely want to know that the right person is leaving at the end of visiting hours," Haley stresses.

Upon entering a facility, each visitor or contract worker has his hand scanned by a device that creates a unique, nondigital number associated with the biometric measurement of the handprint. This number is logged into the imaging database along with a digitized photograph of the person. The visitor or worker must complete a similar biometric reading before he will be allowed to leave the site.

This provides better security than photographs, Haley says. It eliminates the possibility that a guard could be misled by a person of similar physical appearance or fail to closely compare a person with the video image. And because of the reduction in personnel time required to check IDs, many CCA wardens say they can justify the cost of a prison LAN on the basis of this one particular ID module alone.

The eyes don't lie

Chicago's Cook County Jail was the first jail to use retina scanners to identify inmates and process the prisoners through the courts [CW, March 23, 1992].

A light beam emitted by the scanner bounces off the retina and then returns to the scanner, where blood vessel patterns are digitized and recorded. This information is then stored in a database, where it can be quickly matched against existing eye records. The process is said to be more accurate than fingerprinting. It can also immediately match an individual with any alias he may have used during previous visits to the jail.

Before the installation of the $500,000 system, tracking every person processed through Cook County Jail — often more than 400 per day — was a logistical nightmare. Inmates often exchanged identities by memorizing one another's names, addresses and personal information. The system became operational in October 1990, and it foiled 40 attempts to switch identities in the first half of 1991 alone.

Bar-code scanning

In addition to the biometric security applications, CCA makes extensive use of LAN-based imaging and bar-code technologies to keep tabs on inmate movement.

Because inmates are required to show their wristbands for scanning at defined points around the site, any CCA guard can look at the inmate management database and with just a few keystrokes know where a particular inmate is and was — the commissary, the woodworking shop, the library, the cafeteria — at any time.

Wackenhut deploys LAN-based imaging not just for inmates, but for visitors to its correctional facilities. Like CCA, Wackenhut has outlined a standard facilities technology infrastructure based on a modular client/server architecture. A Novell, Inc. LAN connects 486-based Windows clients with 486 or Pentium servers, which run an integrated family of Sybase, Inc. relational databases. One of these incorporates a video database for all prison visitors at high-traffic Wackenhut facilities.

A video image is taken of all visitors or contract workers as they enter the facility. These are digitized and attached to a database record containing demographic data about each visitor. When a visitor attempts to exit, the video image is compared to ensure that the right person is leaving the facility.

Legal incentives

Why are these tracking systems so important? It's more than just a matter of prison security. The systems are needed to meet regulatory requirements and prevent harassment — by the prisoners. Take the irritating and expensive problem of inmate lawsuits.

The number of such lawsuits has risen astronomically in recent years. So many are seen as patently absurd — the inmate who sues because no salad bar is offered at his facility on Sundays, for instance — that Congress has introduced bills specifically designed to head off the frivolous ones.

"A lot of these inmates file their lawsuits knowing full well the facility is too paper-driven to prove them wrong," says David Wilkins, director of the criminal justice practice at Andersen Consulting's Southern U.S. operations in Nashville. "But if you can extract a report that shows the inmate was offered five different jobs and turned them all down or that the inmate's claims to be in a certain place when an assault was committed were false, you've eliminated a lot of effort and expense."

Tracking prisoner movements with bar-coded bracelets and scanners also helps prisons comply with the ever-changing laws and regulations regarding incarceration. The need to track fulfillment of mandated medical treatments, counseling sessions, educational opportunities and the availability of adequate recreational facilities has done much to force the adoption of technology in both public and private facilities.

Business is business

There's another reason timely and accurate prisoner statistics are important: They provide a competitive edge to private prison management firms.

The huge increase in jail populations has sparked an interest by government officials in private sector players such as CCA and Wackenhut.

Wackenhut's Houston says that a more strategic use of information — which depends, of course, on state-of-the-art information systems — is what primarily distinguishes the operations of private prison management firms from government-run facilities.

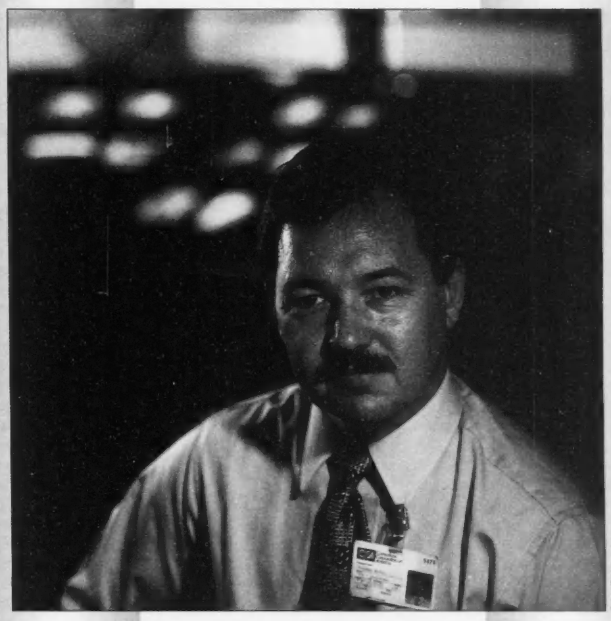
"I've worked in both the public and private sector of the corrections industry, and there is no doubt that the private sector is much more aggressive about the use of information to be cost-effective and efficient managers," Houston says.

Slammer, *page 97*

UNDER A WATCHFUL EYE

The Cook County Jail in Chicago uses biometric retina scanners to identify and track its inmates through the court system

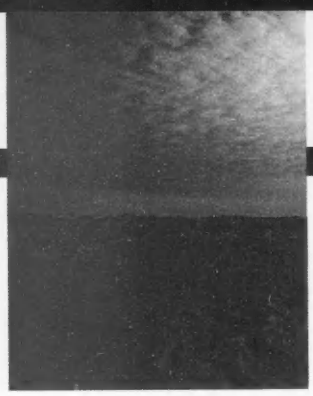
- A light beam is reflected off the inmate's retina.
- The unique pattern of blood vessels is recorded in digitized form.
- This pattern is converted to an algorithm and stored in a database.
- The system automatically searches for matches against existing eye records.
- A printout is generated listing previous arrests and aliases.



RHEA RUPPERT

"An inmate might go out for medical treatment, and a look-alike brother might try and come back in. Or a friend comes in for a visit, and an inmate tries to leave. You have to be very careful to guard against the unexpected. Technology helps us do this."

STEPHEN HALEY,
Director of IS at Corrections Corporation of America in Nashville



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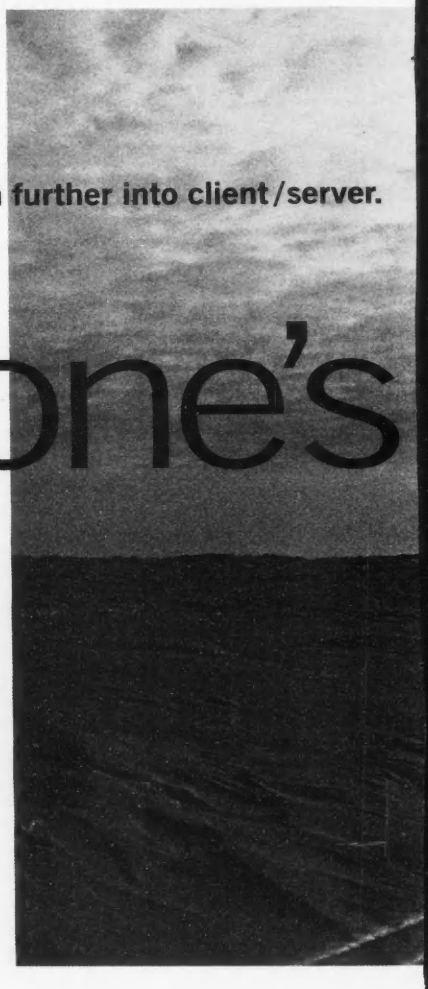

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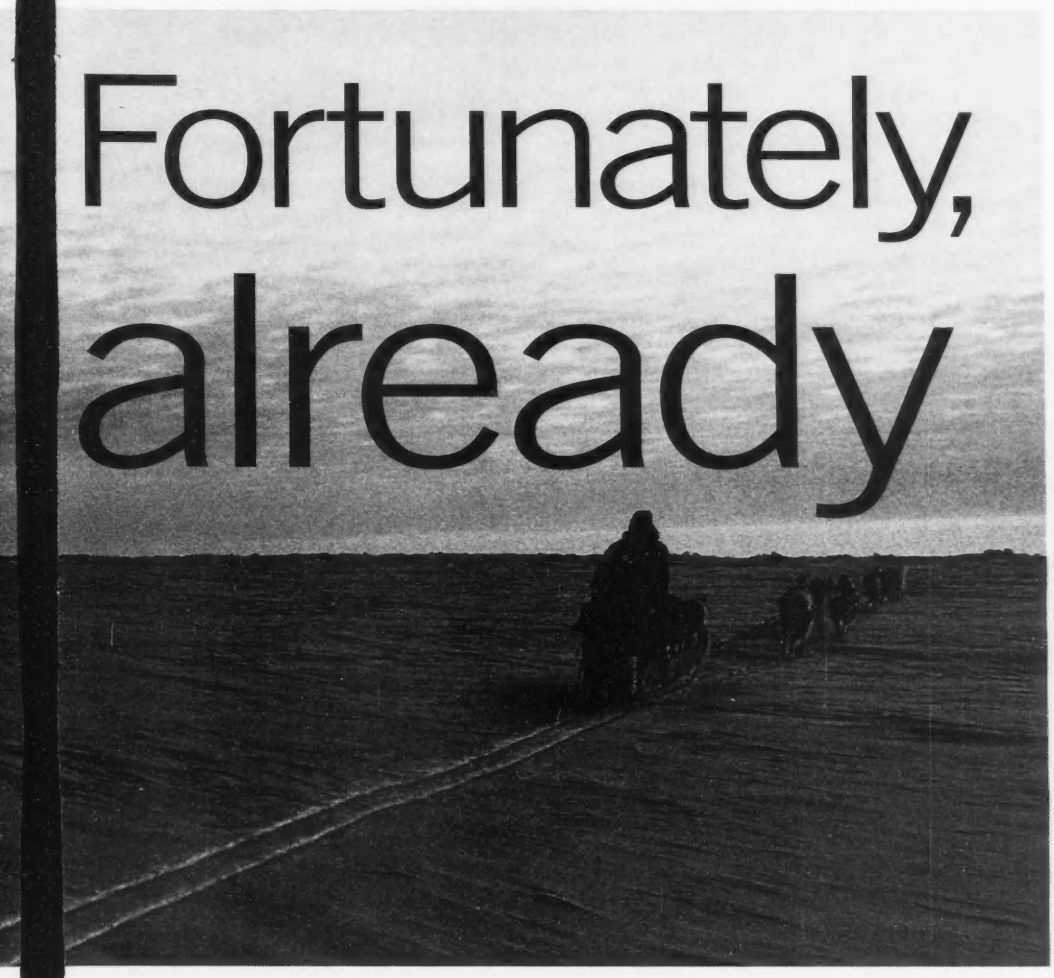

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SLAMMER

CONTINUED FROM PAGE 93

"We routinely take all sorts of trend data from our databases — for example, analyzing why inmates taking a particular class don't seem to be progressing as quickly as they should — to make sure programs are functioning properly."

This sort of thing is important, Wilkins says, because "in corporate America, if employees aren't happy, they quit. In a prison, they riot." The importance of tracking the efficacy of educational, psychological and recreational programs thus becomes critical. "Once you've gotten to the point of an uprising, you've already failed," Wilkins says.

In turn, Wackenhut uses those statistics when bidding on new contracts. This helps demonstrate its fulfillment of regulatory responsibilities and dramatize the superior quality of the inmate services it can provide.

No trust

Despite the upsurge of interest in installing broadband communications and multimedia-capable LANs and WANs in correctional facilities around the country, the goals of prison IS managers differ from those of their corporate counterparts in at least one significant area: They have little interest in integrating these systems.

The reason is system security. Few prison managers have confidence that even the most state-of-the-art security package or algorithm is sufficient for thwarting unauthorized computer access.

"My philosophy is, you throw as many roadblocks in front of a person before they're able to hit the technological jackpot. Hopefully, they will get tired — or you will discover them — before that happens. But no computer can be made 100% secure," says Tom Phalen, manager of the MIS Division at Federal Prison Industries in Washington, a self-supporting corporation within the Justice Department's Bureau of Prisons that uses prison labor to manufacture office furniture and supplies.

Worth the sacrifice

Indeed, Phalen is so concerned about security — and so doubtful that a networked PC on a LAN can ever be made safe — that he refuses to move to a client/server architecture. This admittedly costs him some flexibility as far as getting access to real-time data from the systems installed at Federal Prison Industries' 85 factories in 49 widely scattered federal prison sites, but the peace of mind is worth it, he says.

And Phelan isn't alone in his distrust of network security methods. This means that the level of integration of disparate LAN applications so common in the corporate world is virtually nonexistent at correctional facilities.

"Remember, in many of these facilities, inmates are fairly free to walk around," Wilkins says. "You obviously have to be smart about where you place the equipment — in a supersecure location — in addition to including superior log-on and log-off functions and audit trails within the software itself."

Thus, administrative LANs that communicate with host systems in a centralized state or federal agency for reporting purposes are kept physically separate from LANs on which critical inmate security applications reside.

Educational and vocational LANs and PCs are kept not only clear from any other prison system, but are physically locked away from access to telephone lines or anything that might enable electronic access from outside the prison walls.

Sound paranoid? "We've got some very sophisticated users here. We're not taking any chances. We must make sure there is absolutely no way to get from the classroom PCs to the administrative or the security LANs," Houston says.

It may be strange to think of murderers, rapists and thieves as sophisticated users. But in the surreal world of prison IS, where antinetworking, surveillance by bar code and passretinas instead of passwords are common, conventional IS thinking gets sent up the river. ■

LaPlante is a freelance writer in Palo Alto, Calif.

BEHIND THE BAR CODES

Corrections Corporation of America uses bar-code technology to track inmate movement and activities

- When the inmate arrives at the prison, his personal information and digitized photograph is entered into a database.
- A bar-coded ID tag is issued and placed around the inmate's wrist.
- Inmates are required to show their wristbands for scanning at defined points around the prison.
- All relevant data about that inmate — including his photograph — will appear on the workstation screen.
- Guards can access the inmate management database to learn where an inmate has been at any time of the day.
- Scanning the bar code updates the inmate's record when the inmate seeks medical services, signs in for a class or is transported on and off the site.
- The bar code also tracks inmates' purchases at the commissary, and verifies and debits their accounts.

PRISONERS OF THEIR OWN DEVICES

Officials at prison construction and management firms such as CCA and Wackenhut say many corrections officials remain almost criminally negligent in their lack of understanding of how to manage information technology.

Take, for example, post-installation support. Even though automation may be new to most prisons, "we don't see a lot of contracts where [the prison] wants support after we perform the basic installation," says John Friel, vice president and general manager at I-Net in Boston.

"I suppose they are relying on their own internal people to develop the knowledge and the sophistication to handle support. But they don't seem to have given a lot of thought to it yet," Friel says.

Despite this, prison officials are investing heavily in bringing technology into facilities. In 1994, the Justice Department's IS budget reached a record $995 million. That figure is expected to grow at a rate of 8.4% annually through 1999, according to the Electronic Industries Association's five-year forecast of federal information systems. Most of these increases are targeted at emerging networked multimedia technologies to aid in inmate security and identification functions in state and federal prison systems.

But many of the federal and state agencies sending out requests for proposals for building and managing new prisons don't yet understand the importance of the technology component, Friel says.

"There are a lot of excellent general contractors out there who are doing a superior job in terms of putting together the bricks and mortar for a facility," he says. "But they don't understand the communications infrastructure and technology component of getting a new facility on-line, and today, this is typically bundled in with the construction contract."

You wouldn't see a private sector firm make this kind of mistake, Friel says, "but the prison industry hasn't yet understood this critical distinction."

System integrator I-Net found this to be one of its chief challenges in fulfilling a $12.4 million contract with the Bureau of Prisons. For starters, I-Net's obligation was to deliver the hardware and shrink-wrapped software. The Bureau of Prisons facilities took responsibility for setting up the LANs and WANs. Thus, there was no automated inventory or receiving function at the 70 prison sites across the country. Everything was paper-intensive, and the installation went much slower than expected as a result.

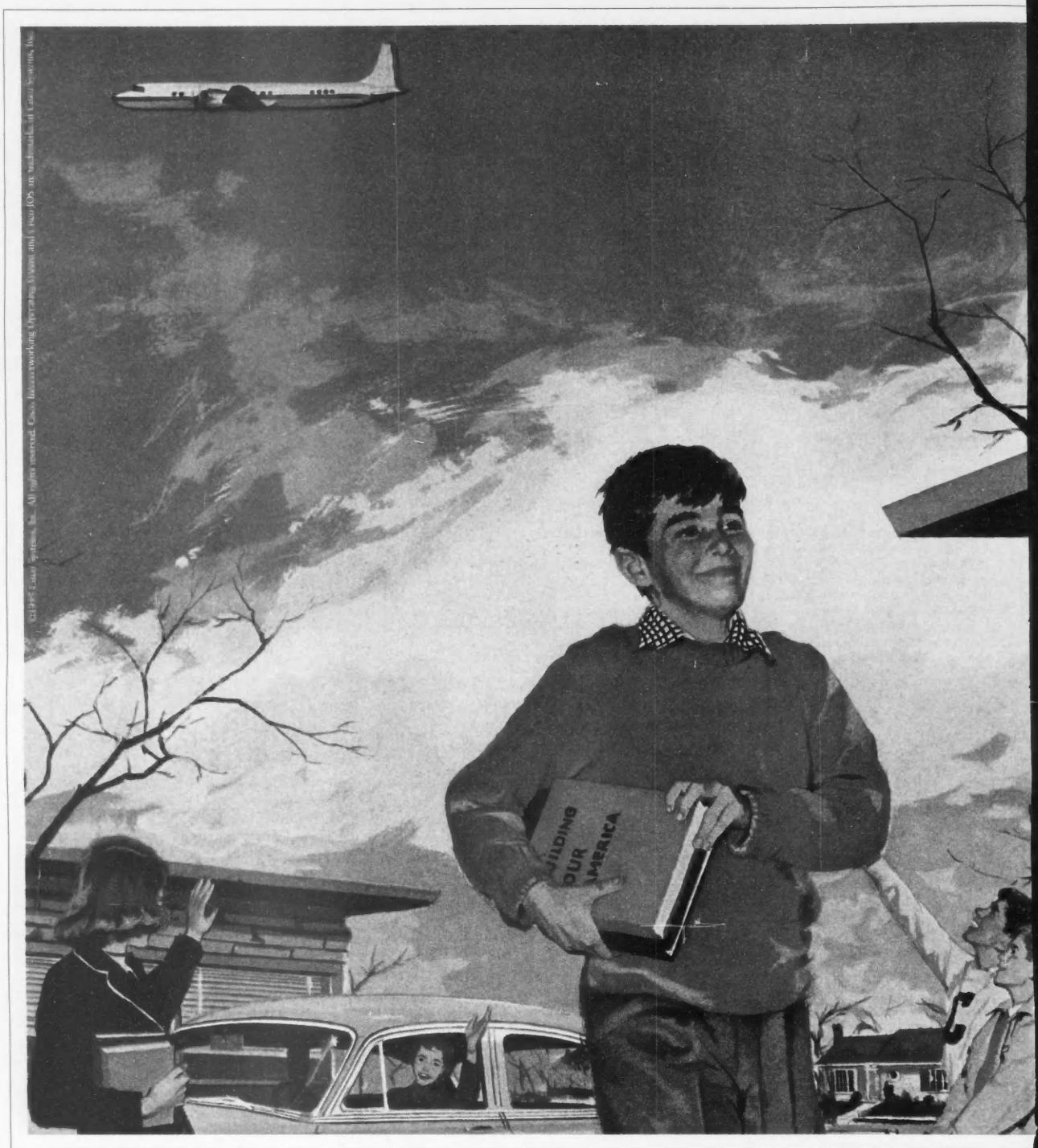
"It's a chicken-and-egg problem: If they're not automated at all, it's actually harder for them to receive and begin using the products. You can't send them E-mail. You can't do electronic tracking of shipments," says Julie Estes, project coordinator for the Bureau of Prisons contract. "In most cases, we were the first attempt at automation for the sites involved in the project."

This case highlights the misunderstanding of end-user support issues at newly automated facilities. Few prisons have dedicated IS support staffs to make sure the fledgling LANs stay up and running or — even more importantly — to ensure users have someone to call when they have a question.

Again, this is an area where the private management firms receive higher marks. Wackenhut places a dedicated IS manager and staff at each facility; the manager handles local technical issues and reports back to the IS director at Florida headquarters. CCA typically assigns on-site IS support responsibilities to its facilities employees as a part-time job. But the company is installing a WAN to link all local LANs in the 22 prisons it manages to a centralized support command center to provide better backup.

"We've been fortunate in that we haven't had a lot of hardware problems to date," says Stephen Haley, director of IS at CCA. However, the ability to do remote network diagnostics from Nashville and electronically deliver software updates "will streamline technology operations even further," he says.

— Alice LaPlante



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65. Communications Systems/Public Utilities/ Transportation
70. Mining/Construction/Petroleum/Refining/Agric.
80. Manufacturer of Computers, Computer-Related Systems or Peripherals
85. Systems Integrators, VARs, Computer Service Bureaus, Software Planning & Consulting Services
90. Computer/Peripheral Dealer/Dist./Retailer
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23. Dir./Mgr. Sys. Development, Sys. Architecture
31. Programming Management, Software Developers
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60. Sys. Integrators/VARs/Consulting Management
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(b) Netware (f) Windows NT
(c) OS/2 (g) Windows
(d) Unix (h) NeXTstep
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Networking Products ❑ Yes ❑ No

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Intelligence Files

A new measure of success

Few managers say their performance measurement systems measure up, and many are overhauling or completely changing these systems, according to a recent survey by the Institute of Management Accountants in Montvale, N.J.

Sixty-four percent of managers at the 262 companies surveyed said they are changing the way they measure success at achieving business goals. This represents an increase of 8% from the group's 1993 survey and an increase of 29% from the 1992 survey. Only 15% of the managers said their current performance measurement systems support top management business goals well; 45% said they are only adequate; and 37% said they are less than adequate or poor.

The top four performance measurement systems used in these companies are, in descending order, budget vs. actual net income, return on investment, productivity and budget vs. actual sales.

It can't happen fast enough

Meanwhile, managers are also largely dissatisfied with one critical aspect of efforts to improve key business processes at their organizations — speed. According to a survey by Rath & Strong in Lexington, Mass., of 200 senior managers from Fortune 500 companies, approximately 80% are reasonably satisfied with the effectiveness of the changes they have achieved but somewhat less satisfied with the sustainability of those results. But their dissatisfaction level skyrockets with regard to the speed at which the desired improvements are achieved.

The Rath & Strong Executive Panel Survey on Connecting Customers and Change found that "executives' satisfaction levels with change efforts were highest in companies where the breadth, depth and frequency of customer contact were similarly high. In particular, there was a strong connection between the degree of executives' customer contact and the satisfaction level with speed of change," said Rath & Strong Vice President John Guaspari. "A strong customer connection seems not only to give people the information to support change efforts but also to align and energize those efforts so they occur faster and stick more deeply."

About 40% of respondents said they are dissatisfied with the speed at which their change efforts are progressing. This dissatisfaction level is about 2½ times the dissatisfaction level reported for the effectiveness of the changes achieved. Satisfaction levels for sustainability of change were about twice those reported for speed.

Fifty-two percent of respondents were dissatisfied with the pace at which they improved new product/service development, and only 5% were "very satisfied." Regarding the pace of improvement of human resource acquisition and development process, 57% were dissatisfied, and none reported being "very satisfied."

In the swing of things

IS executives who attend the PGA West David Leadbetter Golf Academy at La Quinta Resort and Club near Palm Springs, Ariz., can leave with more than just a tan. Leadbetter, who helped pros such as Nick Faldo and Larry Mize improve their swings, has introduced a software package to help academy graduates continue improving their techniques back home.

The Leadbetter-endorsed software was developed by Neat Systems, Inc. in Annapolis, Md. "It's a new version of a pure Windows application that can be run on any 386 or 486 or Pentium computer," said Neat President Mike Larson. "It's a DOS program and was bundled with Intel [Corp.]'s action media boards." Academy attendees' swings are videotaped from several angles, and the images are digitized and stored on the hard disk. The program lets a player analyze his swing side-by-side with that of a pro: The swing is put on a split screen with Faldo's, for example, so that both players can be seen swinging simultaneously.

"We used to show a regular VCR tape of the player's swing, then put on another tape of a pro doing it," said Sadam Schriber, director of the academy. "But there was a disconnect between what they saw themselves doing and what they saw the pro doing a minute later. When you see your drives right next to the pro's, it's very evident when you're out of position. You can be your own best coach."

Each academy participant is given a software package designed specifically for him. Included are drawings indicating optimal club positions at any given point in the swing, as well as several drills demonstrated by a pro to alleviate particular problems. "When you're on the plane, you can pull it up on your laptop and be ready to play at your next business meeting," Schriber said.

Licensing simplified

The Society for Information Management's (SIM) IT Procurement Working Group has produced a collection of nearly 80 electronic "index cards" that make up a checklist for Master Software License Agreements. The checklist defines in alphabetical order most terms and conditions found in mainframe and midrange software license agreements. It is intended as a reference guide to help evaluate a vendor's agreement or construct a company's master agreement.

The checklist appears on diskette with a Windows-compatible card file and covers issues such as liability and warranties. The card file is available from SIM Headquarters, 401 North Michigan Ave., Chicago, Ill. 60611-4267, (312) 644-6610. The price is $75 for SIM members and $200 for nonmembers.

Carmaker opens U.S. center

Automaker Daimler-Benz AG of Stuttgart in Hannover, Germany, has established a research and technology center in Silicon Valley.

According to Hartmut Weule, a member of the Daimler-Benz Board of Management who is responsible for research, the center "is intended to provide excellent access to the latest scientific and technological developments as well as early identification of changes in society."

Weule said the center will not only report such developments but will actively include them in Daimler-Benz's innovation process and make its own independent contributions to research in some specific areas.

The research work at the center will focus on aspects of information technology and microtechnology and also examine questions relating to the wider social context. Conducted in the form of joint research projects, studies and seminars, this work will support the corporation between research organizations and institutes in the U.S., the Daimler-Benz Research division in Germany and the business divisions of Daimler-Benz.

German IS salaries rebound

Computer industry employees in Germany continue to outearn their contemporaries in the U.S., and data processing managers in Germany are looking forward to higher salaries after two lean years.

According to the Interconsult consulting service, data processing managers are enjoying a 5% rise in salaries this year, following two years of salary reductions. "The downward slope in salary levels appears to have bottomed out, but it is difficult to identify any general trends," Interconsult reported.

According to Interconsult, executives in the computer systems and software sectors are being paid between $157,000 and $204,000 this year but are not up to 1993 levels. At that time, the same executives faced salary cuts of up to 10%.

At least data processing managers have achieved parity with 1993 levels. Their salaries are up slightly from last year, ranging from $105,000 to $134,000, about the same as they were two years ago. The average starting wage for data processing managers this year, however, dropped from $104,000 to $102,000. The salaries of chief executives have typically risen by a few percentage points during the past two years.

Calendar

APRIL 30-MAY 6

Client/Server Computing: The Next Generation. Fort Lauderdale, Fla., May 1-3 — Contact: Ashley Pearce, Gartner Group, Inc., Stamford, Conn. (203) 967-6757.

MechanCAD. Chicago, May 1-3 — A new conference for computer-aided design (CAD) professionals in the fields of mechanical design and manufacturing. The focus will be on incorporating new technology and processes into the industrial environment as well as strengthening basic skills in AutoCAD and Autodesk's new ancillary products such as AutoCAD designer and AutoSurf. Contact: Miller Freeman, Inc., San Francisco, Calif. (415) 905-2200.

ISINM '95. Santa Barbara, Calif., May 1-5 — Fourth IFIP IEEE International Symposium on Integrated Network Management (ISINM) Workshop. Contact: Mary Olson, ISINM '95, (805) 569-1222.

MAY 7-13

Navigating IT and Policy Crosscurrents: Strategies for Better Government. Williamsburg, Va., May 7-9 — Keynote speakers: Ellen Brown, procurement counsel, Committee on Reform and Oversights, U.S. House of Representatives; Bill Greenwalt, chief investigator, Senate Committee on Government Affairs, Oversight of Government Subcommittee; Cynthia Kendall, deputy assistant secretary, information management, Department of Defense; Steve LeCompte, vice president, International Data Corp. (IDC) Government Market Services; David Moschella, senior vice president, Worldwide Research, IDC. Contact: IDC Government Market Services, Falls Church, Va. (703) 876-5055.

Computer/Human Interaction '95: Association for Computing Machinery's Conference on Human Factors in Computing Systems. Denver, May 7-11 — Contact: Terry Roberts, US West Advanced Technology, Boulder, Colo. (303) 541-6602.

Benchmarking High-Performance Work Teams: Strategic Approaches for Increasing Productivity and Customer Satisfaction. Washington, May 8-10 — Fees: $895, or $795 each for three or more people. Contact: Kay James, Clemson University Office of Professional Development, Clemson, S.C. (803) 656-2200.

DECUS '95. Washington, May 9-11 — Contact: Digital Equipment Computer Users Society (DECUS), Shrewsbury, Mass. (800) 332-8755.

Electronic Commerce: Paving The Way For the Information Superhighway. Los Angeles, May 10 — Sponsored by Information Systems Associates of the John E. Anderson Graduate School of Management. Contact: Ginny Hyatt, John E. Anderson Graduate School of Management, UCLA, Los Angeles, Calif. (310) 825-1879.

Calendar announcements should be submitted at least six weeks prior to the event and include the title of the event, dates, location, theme or focus, keynote or major speakers, principal topics and a contact person, organization and phone number.

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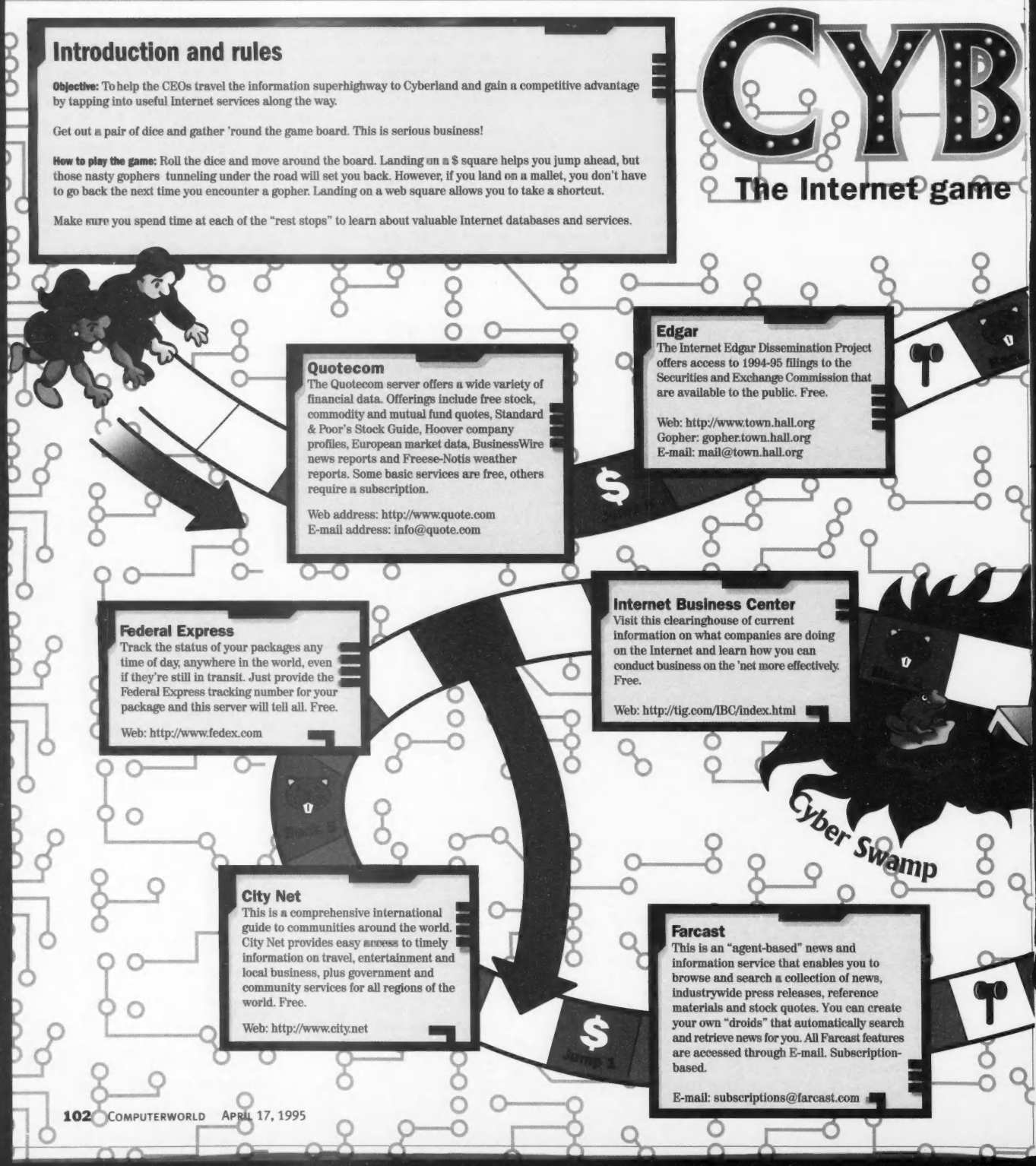
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Get out a pair of dice and gather 'round the game board. This is serious business!
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Make sure you spend time at each of the "rest stops" to learn about valuable Internet databases and services.
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Web: http://www.ais.net/netsearch

Koblas Currency Converter

Convert currency from one denomination to another. This is an excellent example of how information can be presented interactively. Choose the country of interest, and you will see the approximate rate of exchange with other countries. Free.

Web: http://www.ora.com/cgi-bin/ora/currency

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Helpful hints

If you're new to the Internet, <click here>. Each of the services on the game board has a site or E-mail address that will take you there or help you get more information. Make sure you honor uppercase and lowercase letters when keying in these addresses – Internet addresses are case-sensitive!

If the address for the service takes the form http://www.xxx.yyy, the site is on the World Wide Web. You'll need a Web browser program such as Mosaic, Netscape or Lynx to visit these sites.

If the address takes the form of gopher.xxx.yyy, you need Xgopher, WinGopher or other gopher software to access that site.

If you see an E-mail address such as info@xxx.com, simply send E-mail to that Internet address to get an automatic reply.

End of game

You've done it! Now you're a resident of Cyberland. As a reward for completing your journey, here are some tips to help you navigate in cyberspace and keep tabs on the competition:

Lycos and WebCrawler

Check out these Web search engines that can help you find people, places and things on the Web. By periodically traversing the Web, these services attempt to build comprehensive indices for the content of thousands of Internet sites. Each does a slightly different type of indexing so try both. Free.

Web: http://lycos.cs.cmu.edu
Web: http://webcrawler.cs.washington.edu/WebCrawler

Stanford Netnews Filter

People are talking about you on Usenet – or at least they might be. There's a free service called the Netnews Filter run by Stanford University in California that enables you to automatically receive any posts made to Usenet newsgroups that match the keywords in which you are interested.

E-mail: netnews@db.stanford.edu. Type HELP in note body.

ILLUSTRATIONS BY DAVID MARSHALL

Concept: Lory Diz and Kathie Gow, senior editors, In Depth. Information: Bob Rankin. Rankin, known as "Doctor Bob" in the on-line world, is a writer who enjoys exploring the Internet and acting as a translator for the technology-impaired. His free guide titled, "Accessing The Internet By E-Mail," is widely circulated on the Internet. Doctor Bob can be reached at BobRankin@mkv.net.

The earth *is flat.*

The moon **is made of green cheese.**

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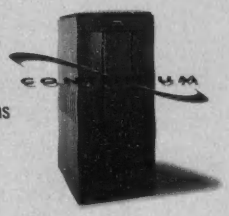

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Computer Careers

IT'S A RAID!

Savvy IS shops are among the best places to search for technical skills, but be careful of your own staff. Talented employees are regular targets of recruiters and competitors.

By Alan J. Ryan

It's every manager's nightmare: The C++ development team that functions as precisely as clockwork loses its team leader, and within two months the entire team walks.

As extreme as that sounds, losing skilled employees to other companies is a valid concern, experts say. Talented staff members, especially team leaders, are frequently pummeled with competitive job offers. But short of eliminating employees' phone rights, information systems managers can only do so much to keep staffers from finding other jobs.

Ron Shelby says he knows the problems of finding and safeguarding talented IS staff members only too well. To fill more than 100 positions, the head of the information management division at USF&G Insurance Co. in Baltimore had to launch an international search. He hired 18 people from England, though he continues to recruit locally.

"Everyone is trying to hire the same people for the skills we're seeking — object-oriented, client/server, Sybase, data modeling and data warehousing," he says.

In the next several months, Shelby says he expects to have finished hiring 200 Smalltalk developers in his 600-plus-person shop. Will he worry about losing any of those hard-found staffers?

"A little," Shelby says. But like many IS managers, he is comforted by the fact that his management strongly supports measures to prevent this from happening. "Many companies tend to bore people and treat them like they're not as clever as they are," Shelby says.

Technical challenges and competitive salaries are among the methods for retaining people. "It's also important to provide real career paths for technical workers," says Jonathan Vaughan, vice president of applied technology at The Chase Manhattan Bank NA in New York.

Chase Manhattan's corporate initiatives include providing a desirable workplace. For example, the company offers staff members the chance to grow vertically in the organization, giving them the opportunity to learn new technical skills and specialties along the way. Extensive management training programs and growth paths up the technical ranks are also available, Vaughan says.

Greener pastures

Despite a manager's best laid plans, sweet deals may tempt even the most loyal employees, though it's usually the unhappy staff members who heed recruiters' calls, experts say.

Debi Billet talks from personal experience, having left two unchallenging jobs earlier in her career. Now, as an assistant vice president of computer services at Republic Indemnity Corp. of America in Encino, Calif., Billet says she's challenged and compensated fairly — and plans to stay put. "Employees must be unhappy first to be tempted," she says.

However, the latest technologies and the toughest challenges can't guarantee you'll keep your staff. Companies known to be technology leaders bear the brunt of competitive recruiting, Vaughan says.

And while no one wants to lose expertise, some skill sets are harder than others to replace. In particular, client/server developers, database architects, network professionals, data modeling experts and data warehousing experts are prime targets.

For Vaughan, object-oriented programming positions are particularly difficult to fill. "It's not so much a skill as a mind-set," he says. "You need a whole different approach to be effective in using object-oriented technology, and it's challenging to find ways to identify the right people that do that."

Likewise, Richard Boone, manager of technology and operations at Wall Data, Inc. in Kirkland, Wash., says he hates to lose network administrators. "Anyone can talk proto-

It's a raid, *page 107*

TEMPTATION CALLS

Why do skilled IS professionals consider leaving their jobs? *Computerworld* **posted this question on the Internet and received the following responses (listed in no particular order): Project progress is too slow; IS budgets aren't large enough to keep staff current; corporate culture; long commute; lack of recognition; poor management; found greater challenges elsewhere; better salary and benefits.**

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It's a raid

CONTINUED FROM PAGE 106

cols, but it takes someone with good business sense to actually administer a LAN and WAN," he says.

Of course, the door swings both ways.

Although few IS managers will admit they actively pursue talent at competitors' shops, recruiters say you've got to know who's out there and where they work. "Finding candidates has become an art form," says Suzanne Fairlie, president of ProSearch, Inc. in Philadelphia.

Moreover, managers say they aren't shy about going after what they want. "I've been known to raid in my time," Boone says.

Picking top guns varies from situation to situation, and IS pros with up-to-the-minute skills rarely need to hunt when they're ready for a job change. These candidates "aren't actually looking. You have to search for them," Fairlie says.

Start with professionals in the same industry, especially those using industry-standard software. "If you have a large mainframe shop with a canned [banking] package, other banks want [those] people" and will target your staff, Boone says.

Almost as effective is to focus on project team leaders. If a strong, well-liked and highly respected leader leaves, other team members may follow, says Ed Doyle, management consultant at Questor-Avante Ltd. in Reno, Nev. "If I can spear the top person, they'll often bring their own team. It's a top-down approach."

True, Boone says. "If the team leader goes, the company had better be careful. The rest of the team may follow."

In addition, word of mouth is a great way to get your name out there, says Bryce Alexander, a senior network analyst at Mercy Healthcare Arizona in Phoenix. Systems programmers, network analysts and other technologists are a close-knit community that spans various industries, he says. "When we start looking for talent, word is spread in this group first."

> "If I can spear the top person, they'll often bring their own team. It's a top-down approach."
> — Ed Doyle, management consultant Questor-Avante

Add an existing relationship to the mix, and job openings may even be filled with a phone call or two. "I've been known to hire people I used to work with, and that's probably the best way to recruit," Boone says. "You bring your old team with you."

Shelby says his personal network in the U.S. and Canada has turned up more data architects than the several recruitment firms he has under contract.

Playing hardball

As important as it is to target and find the right person, persuading them to change jobs comes down to one thing — what is your company willing to offer? Talented workers must be fairly paid, though money alone rarely leads to a job switch.

"Pay is never at the top of the list," says Dudley Cooke, president of Executive Insight Group in Bryn Mawr, Pa. "You could pay someone substantially and ask them to operate the elevator," but they'll always choose something that challenges their mental capacity, he says.

Various characteristics

New recruits look for a variety of attributes at the recruiting firm — healthy IS budgets that will support the use of new technologies, strong training and skills development programs, corporate support for IS, growth paths in both management and technical tracks and opportunity for personal challenges as well as competitive salaries.

But don't overlook lifestyle issues, Boone says. Some workers may be willing to put in long hours to pay their dues, but "as we get older and grayer, we like to have time to sit in front of the fireplace periodically."

Last, understand the potential legal implications that are associated with raiding. While rare, targeting workers on a company's specific proprietary project can have legal implications if the company is a direct competitor, Vaughan says. ■

Ryan is a freelance writer in Pascoag, R.I.

IS RAIDING ETHICAL?

Responses to this question posted on the Internet include:

"... Employees [should] have the freedom to go to the highest bidder. Ethically, [the company] should be given the opportunity to match any offer."

— ANONYMOUS

"There should be a point in a contract between an employee and an employer forbidding such deals. If [such an agreement] is missing, an employee should show loyalty...."

— ANONYMOUS

"It's not ethical to directly steal talent from other facilities. However, it does happen...."

— ANONYMOUS

"In Japan, most people feel it is wrong to allow oneself to be wooed away from your company by another, especially [for] more money. Loyalty is the most important building block for success in any significant enterprise, but employers have an equal bond of loyalty to their employees. [For example], they do not lay off staff merely because it is no longer profitable to retain them and prefer to retrain for a different job within the company or a sister corporation."

— CARL F. ORGUSS, an American citizen who teaches at a university in Japan

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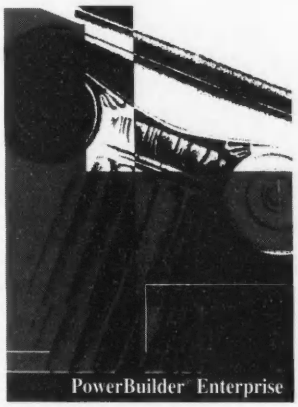

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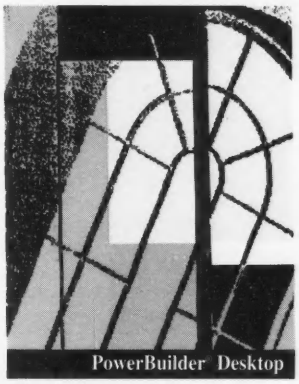

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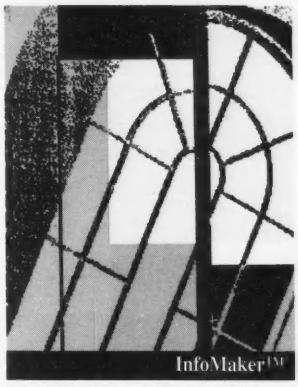

The Window of Opportunity.
Visionary.

At Powersoft, our winning tradition is as individual as it is collective. By building upon collaborative ideas in an open environment, we support the vision of each employee. The result of our teamwork is the continued development of intuitive products, such as the Powersoft Enterprise Series™ – a unified suite of enterprise-wide tools based on a common object technology. In short, we're defining tomorrow's client/server environment today by inspiring creativity, ensuring quality, and emphasizing fun.

Discover the Powersoft tradition... as we continue to expand.

TECHNICAL

Technical Support Engineer(s)
San Bruno

Provide technical phone support, training and some internal applications development to customers using Powersoft products. We seek individuals with extensive experience of applications development in a client/server environment and a strong customer drive.

Prior knowledge of leading edge network database management systems, PowerBuilder and excellent communication and problem solving skills necessary. Macintosh, UNIX, and extensive networking skills a plus.

Consultants
Nationwide

Ensure clients' success in developing PowerBuilder applications through on-site consulting and training. Extensive experience with client/server design and development, GUI design, SQL databases and PowerBuilder is required. Applicants should enjoy working with a wide variety of clients and possess excellent communication skills. Extensive travel required.

MARKETING

Field Technical Marketing Specialist
West Coast & Dallas

Individual will be responsible for the timely delivery of information to Powersoft field personnel and customers. In addition, will develop and write presentations on Powersoft products. Skills and experience necessary for this position include a significant knowledge of databases, client/server development experience (preferably in PowerBuilder) and GUI knowledge. Prior training experience (or strong skills in this area), associate CPD designation and a knowledge of Apple computers are desirable. Some travel is required. Excellent written and presentation skills are essential.

SALES

Account Executives
West Coast

Candidate must have 3–5 years' successful solutions oriented software sales experience and be well versed in client/server architecture with functional knowledge of GUI, relational databases, and networking technologies. An application development background and solid executive level sales experience calling on senior MIS executives is also required. Strong, high-level IS industry contacts are desirable. Position involves 50% travel.

Technical Advisor
West Coast

Experienced professional is sought to support all functions of the Enterprise Series selling cycle, from pre-sales and demos through account management. Qualifications include in-depth knowledge of Windows, relational databases, applications development, UNIX, and outstanding presentation and communication skills. Extensive travel is required.

Please send resumes to: **Ana Recio, Human Resources, 1945 Charleston Road, Building 2, Mountain View, CA 94043; Fax: (415) 335-8775; E-mail: hrpower@powersoft.com.** All resumes will receive a written response within two weeks. Powersoft is an equal opportunity employer actively seeking to diversify its workforce.

508-287-2480
Career Line
For an update on current and future employment opportunities at Powersoft, call our Career Line at (508) 287-2480

Powersoft™
The Power Is Our People

MANAGEMENT OPPORTUNITIES

CableData's Subscriber Management Systems are in operation in over 900 locations worldwide. This business software system is written in C/C++ language, utilizes Oracle's relational database, and operates and executes on IBM's AIX family of RS/6000 and Tandem computers. We are uniquely positioned to influence significantly and benefit from the emerging telecommunications marketplace now commonly referred to as the "information superhighway." Escape to live and work in the rolling foothills of the Sierra's, just 30 miles east of Sacramento and 1 1/2 hours from Lake Tahoe, CA.

DIRECTOR - SOFTWARE DEVELOPMENT

Ensure the quality of software release objectives for multiple software products for global customers. Lead a staff of 60 professionals in the development of business requirements, writing project plans, resolving integration issues, technical design, and keeping projects on schedule. Monitor adherence to project life cycle and quality standards.

DIRECTOR - SOFTWARE QUALITY ASSURANCE

Provide management and technical leadership of 30 professionals in setting quality standards and plans, automated testing, improved productivity and metrics. Enhance software QA processes to increase customer satisfaction, reduce product development costs and reduce product time to market for new products. Manage change control and achievement of ISO9000 certification.

The minimum requirements for both positions include a track record of successfully managing the quality and technical progress of multiple projects and teams including scheduling, phasing and adherence to the full project life cycle. Additionally, you must possess a Bachelor's degree, several years experience in state-of-the-art architectures, and strong business acumen.

Multiple additions to the development staff are also available and include:

PROGRAMMER ANALYSTS • SOFTWARE QA ANALYSTS • UNIX SYSTEM ADMINISTRATORS • DATABASE ADMINISTRATORS • TECHNICAL WRITERS

Candidates with experience in subscriber/transaction or credit card management and development of Unix, C and C++ applications should detail their experience in their response. For immediate consideration send your resume with cover letter indicating position of interest to: CableData, ATTN: Mike J. Ziebell, 5272 Robert J. Mathews Parkway, El Dorado Hills, CA 95762, or FAX to 916-939-5694. AA/EOE

cable data

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Framingham, MA 01701-9171, 508-879-0700

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Marty Finn
Mack Center 1, 365 West Passaic St.,
Rochelle Park, NJ 07662, 201-587-0090

WASHINGTON, D.C.
Katie Kress
8304 Professional Hill Drive,
Fairfax, VA 22031, 703-573-4115

CHICAGO
Patricia Powers
1011 E Touhy, Suite 550,
Des Plaines, IL 60018, 708-827-4433

LOS ANGELES
Barbara Murphy
2171 Campus Drive, Suite 100,
Irvine, CA, 92715, 714-250-0164

CAREER SURVEY: Environmental

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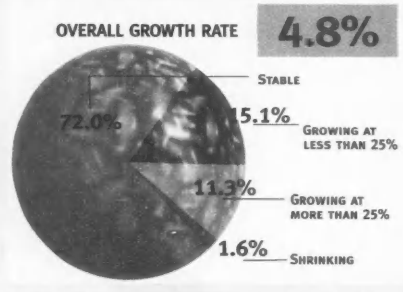

SURVEY BASE: 1669 TECHNOLOGY FIRMS INVOLVED IN ENVIRONMENTAL

SURVEY CONDUCTED BETWEEN JANUARY'95 AND MARCH'95;

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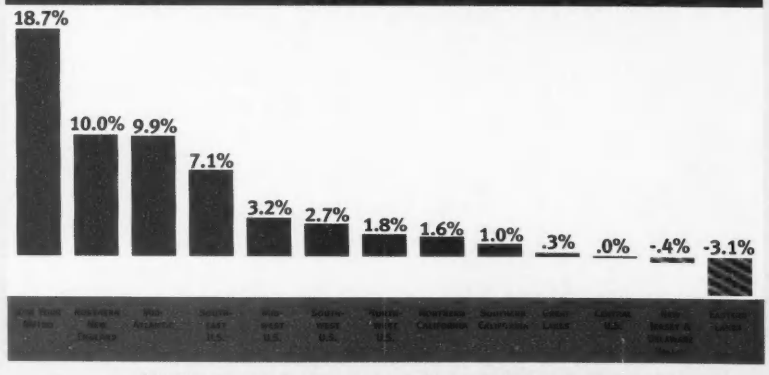

CORPTECH, A DIRECTORY PUBLISHER IN WOBURN, MASS., TRACKS THE U.S. 35,000 TECHNOLOGY MANUFACTURERS. THIS SURVEY RELATES TO THE 29,383 TRACKED FIRMS WITH FEWER THAN 1,000 EMPLOYEES.

Computer Careers

Team Leader. 40hrs/wk., 9am - 5pm, $45,000/year. Lead projects for the design, development and testing of advanced software applications for business clients. Projects include: object-oriented programming; UNIX system administration; Graphical User Interface with CASE tools. Skills: Motif; X-Windows; MS Windows; Borland; Paradox; Oracle; SCO UNIX; AIX C; C++; AIX Windows interface composer toolkit on RS/6000; SUN workstation. M.S. in Computer Science as well as two years experience in the job offered or as a Programmer required. Previous experience must include: ORACLE and related tools; C++; AIX Windows interface composer toolkit on RS/6000; Motif; UNIX system administration. Must have proof of legal authority to work permanently in the U.S. Send two copies of resume to: ILLINOIS DEPARTMENT OF EMPLOYMENT SECURITY, 401 South State Street - 3 South, Chicago, IL 60605. Attention: Leila Jackson, Reference #V-IL-12514-J. NO CALLS. An Employer Paid Ad.

Systems Analyst to supervise and coordinate development of coordinated purchase order system in major manufacturing environment; develop application systems for IBM mainframe using COBOL, DB2, IMS, DB/DC, XPEDITER, BTS, QMF, and OS/JCL; design, implement, and conduct test plans and programs for manufacturing management and purchase order system using QBE, PRO EDIT, FILE/AID; duties include system quality inspection and system software quality assurance to meet ISO-9000 standard requirements. Require Master's in Computer Science and 1 yr. exp. as a Software Design Consultant which includes design, development, maintenance and system support using IMS/DC DBS, QMF and COBOL II. Master's coursework must include Database Management Systems, Software Specification/Design, and Software Management. 40 hr wk. 8am-4pm. $38,285/yr. Send resume to 7310 Woodward Ave., Room 415, Detroit, MI 48202. Reference No. 29795. Employer Paid Ad.

SOFTWARE ENGINEER - Research, design and develop computer software systems in conjunction with hardware product development and modification, applying principles of computer science, engineering and mathematical/scientific analysis. Responsible for the development and maintenance of the Bel-CADD database. Monitor the computer system performance and propose and implement changes or modifications to software, hardware, and procedures to most effectively utilize the computer facility. Conduct studies pertaining to the development of new systems to meet current and projected needs. Upgrade existing systems and develop new systems to increase production. Responsible for the planning, specification and integration of software solutions to improve operations of the Bel-CADD computer system. Responsible for reviewing system capabilities and upgrading the system with the latest developments in order to ensure custom-tailored system operations. Maintain PRISM 3.0 software on Spectragraphics 1500 series graphics controller. Conduct drawing transfers via magnetic media using DXF, CGM and HPGL graphic interface format files. Operate VOS on Harris supermini computers using Harris editors HED and TTX, JOBCONTRL language, Harris FORTRAN 77 Compiler and Harris MACRO language. Enhance TCP/IP communications programs on Harris using TELNET, FTP and RLOGIN. Maintain Harris-to-PC file transfer programs UPLOAD & DOWNLOAD. Maintain and support 3270 protocol software between IBM and Harris computers. Bachelor's+ in Computer Science & 2 yrs. direct experience or 3 yrs. experience as a Systems Analyst. If qualifying under related experience, Systems Analyst experience must include 3 yrs. experience in Bel-CADD database maintenance, VOS on Harris supermini computers, PRISM 3.0 software for Spectragraphics 1500 series graphics controller and 3270 protocol software between IBM and Harris computers. 40 hrs/wk. 8:30 a.m. to 5:00 p.m. M-F; $37,500/yr. Must have proof of legal authority to work permanently in the U.S. Send 2 copies of resume to: Travis Bartel, Jobs, Employment & Training Services, 201 E. Washington Ave., Rm. 211X, Madison, WI 53702. Reference to case #950093 must be on resume.

Systems Programmer. Analyze business procedures and problems for manufacturing and telecommunications clients to refine data and convert it to programmable form for electronic data processing for use in business systems applications primarily in the areas of Material Requirement Planning, Inventory Control and EDI. Provide technical solutions in these areas utilizing the following computer methodologies: IBM 3090, IBM 9375, UNISYS A-series, UX6000, MVS/XA, MVS/ESA, DOS/VSE, UNIX, DB2, IDMS, VSAM, ORACLE, DMSII, CICS, COMS, MCP, CANDE, WFL, GEMCOS, TADS, DMINQUIRY, ERGO, ALGOL, QMF, SPUFI, INTERTEST, SDF, MICROFOCUS, COBOL/2, Workbench, CICSVS86, XDB, COBOL, PASCAL, BASIC, FORTRAN AND SAS. Estimate software development efforts. Study clients needs and customize standard software packages to tailor to the needs. Install the software at client site and conduct user training. Study existing data handling systems to evaluate effectiveness and develop new systems to improve production or workflow as required. Specify in detail logical and/or mathematical operations to be performed. Plan and prepare technical reports, memoranda and instructional materials relative to the establishment and functioning of operational systems software. Requirements: Bachelors degree in Computer Science or engineering plus two years experience as a Systems Programmer or Systems Analyst. Two years related experience must include business systems applications development for manufacturing and telecommunications industry, in the areas of Material Requirement Planning, Inventory Control and EDI, and in using the following hardware and software: IBM 3090, IBM 9375, Unisys A-series, MCP, MVS/XA, DOS/VSE, UNIX, DB2, IDMS, ORACLE, DMS II, CICS, COMS, GEMCOS, COBOL, PASCAL, ALGOL, CANDE, WFL, TADS, DMINQUIRY, ERGO, QMF, SPUFI, INTERTEST, SDF, MICROFOCUS COBOL/2 WORKBENCH, CICSVS86, and XDB. 40 Hr./Wk. 8:30 a.m. to 5 p.m. $40,000/year. Must have proof of legal authority to work permanently in the U.S. Send two copies of resume to Illinois Department of Employment Security, 401 S. State Street, 3 South, Chicago, Illinois 60605. Attn. Len Boksa, Ref. V-IL-12807-B. No calls. An employer paid ad.

Director of Technical Resources

Established development company is seeking an individual who has experience in recruiting for TANDEM & other platforms for a management position. We offer highly Competitive Compensation & Benefits.

Mail or fax resume to:
Chris Larsen
P.O. Box 191118
Little Rock, AR 72219
501-455-0490 fax

SOFTWARE ENGINEER. 40 hrs/wk. 8 a.m. - 5 p.m., $45,000./yr. Analyze, design, and develop computer software application systems on IBM mainframe computers. Document user requirements, conduct process modelling using ADW CASE Tool, and prepare test the test data and implementation plans. Requires Bachelor's Degree in Computer Science or equiv. (Equiv. includes 4 yrs. exp. in job offered or 4 yrs. exp. as Systems Analyst/Programmer in lieu of bachelor's degree. Reqr. 3 yrs. expr. in job offered, or 3 yrs. expr. as Systems Analyst/Programmer. Reqr. expr. in software development on IBM 30xx mainframe utilizing CICS, DB2, MVS, COBOL II and ADW CASE Tool. "Employer paid ad." E.O.E. Send resumes to: 7310 Woodward Ave., Rm. 415, Detroit, MI 48202. Ref. No: 106993.

ECOM ECOM is a DP consulting company with immediate opportunities in the following skill sets: (Contract & Permanent) with a minimum of 2+ yrs. overall experience required.

- C++, SQL, UNIX
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- TRANSACT SQL, Data Structures
- Oracle V7.1 DBA (PARALLEL SERVER)
- Oracle V7, SQL*FORMS 4.0
- LOTUS NOTES - Dev. & Adm.
- COBOL II, CICS, APS (a+)

Please call or fax resume to:
ECOM - Elite Computer Consultants Inc., 10333 NW Fwy., Ste 414, Houston, TX 77092, (713) 686-9740; Fax (713) 686-9454

Programmer/Analyst (Houston, TX area client site) Analyze, design, develop, code, test, maintain and document programs for commercial and financial applications systems, using RPG in an IBM midrange environment. Bachelor's degree in Comp. Sci., Math, Eng'g., or Bus. Admin., and 1 yr. exp. in job or will accept 3 yrs. exp. in lieu of Bachelor's and 1 yr. exp. Development work must include at least 1 yr. RPG/400 programming exp. on the AS/400. 40hrs/wk, 8-5, $37,500/yr. Apply at the Texas Employment Commission, Houston, TX, or send resume to the Texas Employment Commission, TEC Building, Austin, TX 78778, J.O. #TX7505010. Ad Paid by an Equal Opportunity Employer.

Now there's an easy, fast, and free way to show your resume to hundreds of potential employers. Speed it to **IntelliMatch** at:

http://www.intellimatch.com/intellimatch/

- **Programmer/Analysts -VAX, C, Sybase, Powerbuilder**
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- **Software Developers - C, C++, Unix**

If you have experience in these areas, you can also send your resume to: 2107 N. 1st St., Suite 460, San Jose, CA 95131. FAX (408) 441-7048. EOE.

LEAD PROGRAMMER ANALYST In a consulting environment in central Ohio, use object-oriented approach to design and develop a client/server network based telecommunication database administration system. Responsibilities include identify problems, estimate programming efforts, define system requirements, and high level design. Lead the team to develop programs and implement system test plans. Analyze test results to verify systems functionalities and responsible for all testing phases from problem formulation through problem solution. Duties include use of: UNIX operating system; C/C++, Pro*C, & SQL languages; TCP/IP protocol; ORACLE database; object-oriented design; UNIX utilities (make, sccs, awk, lex, yacc); JAM development tools & ORACLE database tools including SQL*Net, SQL*Loader, EXP/IMP; Shell programming. Bachelor's in Electrical Engineering or Computer Science or Data Processing/ Systems Analysis (or equivalent degree as judged by a college official, credentials evaluator or an educator) & 4 yrs. exp. in the job described or 4 yrs. exp. as a Programmer Analyst or Systems Analyst or Software Consultant. If qualifying under related exp., related exp. must include 1 yr. object-oriented design, UNIX utilities (make, sccs, awk, lex, yacc), Shell programming, JAM development tools for client/server applications, and ORACLE database tools including SQL*Net, SQL*Loader, EXP/IMP, and Pro*C. In lieu of direct exp. willing to consider someone with exp. in any or all of the related occupations listed as long as exp includes all databases, languages, tools, protocols, utilities, operating systems & design approaches listed. 40 hrs/wk, 8:30 a.m. - 5:00 p.m.; Mon-Fri; $49,000/yr. Must have proof of legal authority to work permanently in the U.S. Send 2 resumes and cover letters (NO CALLS) to L. Eggleston, JOB #988, Ohio Bureau of Employment Services, P.O. Box 1618, Columbus, OH 43216.

SOFTWARE PROFESSIONALS
National Opportunities

At Keane, our only business is Software Development. We build, re-engineer, maintain and enhance our client's most critical business systems. Our clients, some of the largest and most prestigious companies in the world, have learned to depend on Keane to deliver quality results, on time and within budget. With our focus on customer service and software methodologies, it's not surprising that 90% of Keane's business is generated from repeat customers. Additionally, since our inception in 1965, Keane has enjoyed superior and consistent financial results. This level of excellence has been recognized by prestigious publications such as *Business Week, Forbes* and *The Boston Globe* which have named Keane one of the best run companies in America. If you want to be part of a dynamic, solutions-oriented software development company where superior performance is recognized and rewarded, then send your resume in confidence to Keane. We are looking for a few "best of breed" software professionals at the following levels:

BRANCH MANAGERS

These individuals will be responsible for performing general management duties to include P & L responsibilities and direct supervision of management, sales and administrative personnel. Applicants must be able to effectively direct the efforts of our sales and marketing staff involved in offering solutions-oriented consulting services to our clients. The successful candidate will possess strong leadership and interpersonal skills as well as extensive knowledge of how Information Technology can be used to assist companies to achieve their business objectives.

MANAGERS & SENIOR CONSULTANTS

We seek professionals with strong leadership, communications and state-of-the-art technical skills capable of managing or leading software development projects utilizing both traditional and rapid development lifecycles in mainframe and client-server environments, performing as a facilitator, data/systems architect and/or strategic information planner; managing application re-engineering and/or application outsourcing, or leading, managing and building both technical and management personnel.

SALES PROFESSIONALS

We seek bright, aggressive, solutions-oriented software services professionals with superior oral and written communication skills with strong industry/technology acumen. Our sales professionals work closely with the key management personnel of our customers to understand their needs and to develop cost-effective, creative solutions for their business problems. If you're up for the challenge to compete at the strategic level, and you possess the requisite sales and/or industry experience, we'd like to talk to you.

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FAX (212) 406-1768

Analytical Consultant. 40hrs/wk., 9am - 5pm, $49,000/year. Design, development and programming of software applications for business clients. Tools: AS/400; RPG/400; CL/400; SQL/400; Formsplus/400; TCP/IP. M.S. in Computer Science as well as one year experience in the job offered required. Previous experience must include: CL/400, RPG/400; Formsplus/400; SQL/400; UNIX/C; ORACLE; TCP/IP. Please send two copies of resume to: Mike Brooks, Jobs, Employment & Training Services, 201 E. Washington Ave., Rm. 211X, Madison, WI 53702, Case #950107. An Employer Paid Ad.

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Fax resumes to 614-337-8399.

SOFTWARE ENGINEER: (2 positions) 40 hrs./wk., 8am-5pm, $41,000/yr. Analyze, design, code and test computer s/w application systems utilizing UNISYS A-Series in a MCP, DMS II, LINC II and COBOL environment. Carry out system testing and user training. Require Bachelor's degree in Computer Science or Electrical Engineering and 3 years experience in job offered or 3 years experience as Programmer Analyst and/or Software Engineer and/or Consultant. Require work experience in design and development of s/w applications on UNISYS A-Series computers utilizing MCP, DMS II, LINC II and COBOL. "Employer Paid Ad". E.O.E. Send resumes to: 7310 Woodward Ave., Rm. 415, Detroit, MI 48202. Ref. No: 54395.

Programmer/Analyst - client sites in Boca Raton, FL & Co. premises in Boca Raton. Integrate, debug source code modules to OS/2 operating system; ensure integrity & functionality; provide technical support; build verification tests; use: OS/2, MS-Windows, STP & Teamwork. Bachelor/Comp.Sci. Engg or Math. 2yrs/exp. in job offered or 2 yrs as System Administrator or Engineer or Programmer or any combination thereof. Job offered or related occupation must include 6mos/exp using OS/2, MS-Windows, STP & Teamwork. 40hrs/wk (8-5, M-F). $38,255.55/yr. Send resume to: Job Service of Florida, 2660 West Oakland Park Blvd., Ft. Lauderdale, FL 33311-1347. Re: Job order # FL-1223248.

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COMPUTER CONSULTANT-Computer Consultant for consulting firm in NE Ohio. Consulting with clients to ascertain and define their business requirements re problem areas and utilizing technical expertise to provide solutions to clients' needs, including analyzing, designing, developing and implementing application software. Duties require working on UNIX based machines, Relational database, Sybase, Informix, etc., UNIX and 'C' programming, GUI Tools (UNIFACE, Windows), (Sybase, Informix, etc.). Skills also include: DOS and MS-Excel. Req'd: Bachelors in Computer Science, Systems Analysis or Mathematics with 2 years exp. in the job offered or 2 years exp. in a related occupation such as System Analyst, Systems Programmer, Programmer/Analyst, Software Engineer, Consultant or Systems Executive. Will accept 3 years of college education plus 3 years of experience in the related occupation in lieu of required education and experience. The related experience must have included design and development of commercial applications; and using UNIX based computers; INFORMIX, CICS, INGRESS, Sybase. 40 hrs/wk. 8:00 am.-5:00 pm. $3,750 per month. Send 2 resumes & cover letters (no calls) to G. Maugans, Job #01027, Ohio Bureau of Employment Services, PO Box 1618, Columbus OH 43216.

SIOUX CITY

INFORMATION SERVICES DIRECTOR

City of Sioux City, IA
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Excellent opportunity for individual with strong leadership abilities to implement innovative and progressive management ideas. Family-oriented community with many positive quality of life opportunities. This is a highly responsible management/technical position involving the planning and directing of the information systems services, including analyzing systems and equipment needs, advising department/agency heads on information systems services, preparing budget and administering expenditures, and serving on boards and committees. Work is performed under general direction of the Woodbury County Information & Communications Commission. Must have extensive experience in professional information systems with strong emphasis on management. Successful candidates should have experience with networked systems and packaged software. Graduation from an accredited four-year college or university with major course work in business/public administration and computer science. **Contact Human Resources Department, P.O. Box 447, Sioux City, IA 51102-0447 for an application and job description, or you may call (712) 279-6202. Deadline for completed applications including cover letter and resume is May 31, 1995.** AA/EOE.

"From some 600 responses generated by a recent Computerworld recruitment advertisement, we've already hired about 50 professionals who were direct replies -- and we're still hiring from that advertisement."

Jason K. Whitehair
Recruiting Manager/Systems Engineering
MCI Telecommunications Corporation

Having just celebrated its 25th anniversary and exceeding $10.6 billion in revenue, MCI is not only the nation's second largest long-distance provider, but also the world's fifth largest carrier of international traffic. Because the Systems Engineering Division plays a strategic role in shaping MCI's technological future, Recruiting Manager Jason Whitehair relies heavily on *Computerworld* to help recruit leading-edge professionals.

"Dedicated to delivering premier customer service and the highest quality products, Systems Engineering provides systems and software development and support to all of MCI's domestic and international voice and data businesses. Everything from message processing and commercial billing ... to network management and control ... to MCI Mail ... and more. Take our Friends & Family program, for example. Our software applications are what keep track of millions of 'calling circles' and generate customized bills.

"Not limited to any one platform, we utilize the platform best suited to deliver each customer service. So I'm always looking to recruit systems engineers with at least five to seven years of experience in a wide range of technical environments. Because *Computerworld* is one of the best trade publications for staying on technology's leading edge, its readers are the professionals we're generally looking to recruit. When it comes to recruitment advertising, *Computerworld* delivers a much higher ratio of qualified candidates than daily newspapers or nontechnical publications.

"The vast majority of resumes generated by our *Computerworld* recruitment advertisements are from very high calibre candidates. We're typically able to use 350 out of every 400 resumes we receive -- and that's a hit rate of nearly 90%. In fact, from some 600 responses generated by a recent *Computerworld* recruitment advertisement, we've already hired about 50 professionals who were direct replies -- and we're still hiring from that advertisement. For a single advertising investment, we've more than gotten our money's worth.

"After Systems Engineering moved from Washington, D.C. to Colorado Springs back in 1991, our *Computerworld* recruitment advertising has been instrumental in helping us hire more engineers than usual -- and hire them fast. And, since I'm still seeing activity as a result of a recruitment advertisement we ran five months ago, I know we get sustainable impact with *Computerworld*.

"As MCI continues to expand into the long distance market including data transmission, 800 service, international calling, and Personal Communications Services (PCS), we'll continue to rely on *Computerworld* recruitment advertising to attract the hard-to-find, highly qualified technical people our global business demands."

Computerworld. We're helping Information Systems employers and qualified Information Systems professionals get together every week. Just ask MCI's Jason Whitehair.

To put Computerworld to work for your hiring effort, call John Corrigan, Vice President, at 1-800-343-6474. And place your hiring message where the qualified candidates look. Every week.

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COMPUTERWORLD

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Omni Resources, Inc. seeks IS professionals with 2+ years of practical experience, looking for immediate contract or full-time positions in the following areas:

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Midrange
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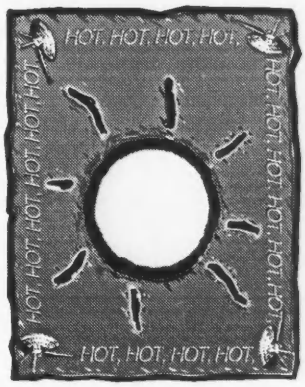

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We're looking for Analysts to design, develop and implement software in business applications areas and to take a leadership role in a team setting. You'll need a bachelor's degree in Computer Science or Business Administration and strong problem-solving and communication skills. Experience in one or more of the following is also required: Smalltalk, Object-Oriented analysis and design, C, C++, Unix, SQL, Oracle, OMNIS 7, Client-server technology, DOS/Macintosh, Windows. Relational database management and technology. Job Code ENA333CW.

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We're looking for Software Engineers with a BS/MS in Computer Science or Electrical Engineering and three plus years of experience in one or more of the following areas: voice processing applications, real-time OS, device drivers, GUI, PC/Windows, or SNMP. Unix, OO and C/C++ experience is also required. Job Code ENA320CW.

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Senior Programmer Analyst to be responsible for overall data requirements of Marketing & Sales activity; data analysis techniques to build overall enterprise data model; logical system design of Dealer Information System & Online order processing system; develop repository interface to ADW workstation tool on IBM 3090 using COBOL, DB2, REXX, JCL & ISPF; Reqs: B.S. in Comp. Sci, Systems Analysis, Electrical or Electronic Engg., Computer Info. Systems or equiv. & 2 yrs. exp. in job offered or 2 yrs. related exp. as a Computer Consultant, Systems Analyst or Deputy Manager. Must have some related exp. in each of the following: system analysis & design, data modeling & integration of CASE tools; working on IBM 3090 & using CICS, COBOL, DB2, REXX, JCL ISPF & ADW; $55,000/yr, 40 hrs/wk 8a-5p. Send resume to 7310 Woodward Ave., Room 415, Detroit, MI 48202. Ref. #56095. "Employer Paid Ad"

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SYSTEMS ANALYST - Analyze the requirements of a data center and program, implement & support its hardware and software components in RX/6000 (AIX), and PC (DOS, WINDOWS) environments, using INGRES database, and C, PASCAL, FORTRAN, LOTUS NOTES, MICROFOCUS WORKBENCH, ABF, WIFRED. Req'd: M.S. in Engineering or Computer Science; 2 yrs exp in position offered or 2 yrs exp as Software Engineer; 2 yrs exp must include work in RS/6000 or any PC-based system, INGRES or INFORMIX databases. Academic background must include one (1) semester each of the following: a) Data or Digital Communications, b) Analog/Digital Signal Processing, c) PASCAL or C or FORTRAN Programming, 40 hrs/wk; 9 am - 5 pm; $36,000/year. Send resumes to Ginny Burton, Dept. for Employment Services, 275 East Main St. 2W, Frankfort, KY 40621. Must refer to JO# 345278. Equal Opportunity Employer.

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Technical Support Specialist (Programmer/Analyst): Will program, test, code, debug, design, install, and maintain company's information database computer systems including software, hardware, and communication networks. Will program, design, and implement database software for use by financial department and production of information reports depending upon end users needs in a VAX/VMS environment using Basic, COBOL, and 4GL languages to modify software. Will install, test, and administer networks and production systems using Ether Talk and Apple Talk networks. Will modify IBM and MAC PC communication software to enable integration into a LAN network. Requires Master's degree in Computer Science. Education to include completion of a Master's thesis or six months as a Computer Laboratory Assistant in which the individual performed modification, implementation, and installation of both IBM and MAC PCs into a VAX LAN network environment. Education to include completion of one course in each of the following: Software Engineering; Database Programming; Advanced Database Design; and, Advanced Data Analysis. Hours: 9:00 a.m. - 5:00 p.m. 40 hours per week at $32,535 per year salary. Must have proof of legal authority to work permanently in the U.S. Please send two copies of resume to: Illinois Department of Employment Security, 401 S. State St. - 3 South, Chicago, IL 60605, ATTN: Brenda Kelly, Ref. #V-IL 12844-K. No Calls. An Employer Paid Ad.

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Systems Engineer, 40hrs/wk, 8-5, $40,425/yr. Design, develop & test client-server based Network application software & X-window based interactive GUI on UNIX workstations for network analysis. Use object-oriented design principles. Configure, integrate & fine tune RISC based UNIX machines on LAN & WAN. Maintain & configure DNS, NIS & NFS for distributed networking. Write Shell scripts using Korn & Perl to develop tools to automate network systems administration. Provide technical support for end users for client-server communication. Min reqs: MS in Computer Engineering or Computer Science. 1 yr in carrying out those duties set forth in the job offered or 1 yr in programming (including therein 1/2 yr in: network systems support, programming in C/C++ in a TCP/IP client-server environment, developing X-based GUI tools, Korn & Perl programming, Installing & maintaining DNS, NIS, & NFS & multi-vendor RISC based UNIX systems on LAN & WAN, & recommending hardware & software for end users). Apply at the Texas Employment Commission, Dallas, Texas, or send resume to the Texas Employment Commission, TEC Building, Austin, Texas 78778, J.O. #TX7505014. Ad Paid by an Equal Opportunity Employer.

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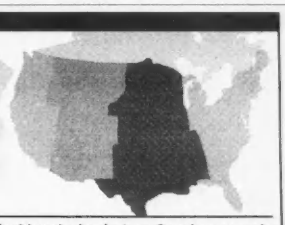

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SOURCE: Skill Survey of *Computerworld's* Audience, August 1994.

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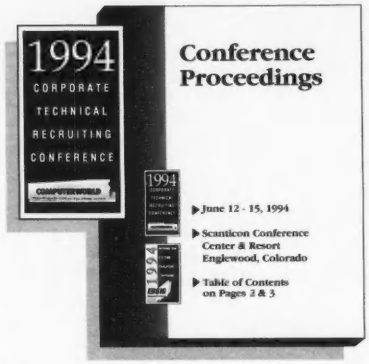

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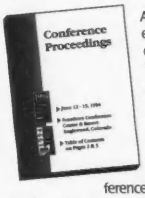

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Tracks & Speakers

New Session for 1995!

TRACK 1: Survey Course on Recruiting Basics

What should I know to be an effective recruiter? What resources are available to me? This session, led by a peer who is experienced with diverse resources, will provide newer entrants to the recruiting profession with an essential overview of the basic elements.

Gale Hiering Varma
HR Director
Deloitte & Touche

TRACK 2: Career Options for Recruiting Professionals

How can you, the technical recruiter, develop professionally? In this session, you'll gain insight from a seasoned practitioner and HR expert on how you can grow and advance yourself in the recruiting and HR field.

Alan Alper
Editor
Computerworld's Client/Server Journal

TRACK 3: Why Can't I Find the Skills I Need When I Need Them?

Advances in technology have a direct relationship with the amount of talent available to you. The faster the technology, the fewer the experts available. In this session, learn about this timeless topic and how to assign realistic expectations to your recruiting efforts and resources.

William S. Swan, Ph.D.
President
Swan Consultants, Inc.

TRACK 4: Candidate Selection

Are you using research-proven methods and skills to enhance your interview and performance appraisal process? How can you apply behavioral interviewing techniques immediately? In this session, you'll learn about the "science behind the hiring process" from one of the field's leading experts.

John Corrigan
VP & General Manager
Computerworld's Professional Development Division

and others...

TRACK 5: Sourcing Techniques

What are the latest developments in sourcing techniques such as networking, joining technical associations, using online job and resume databases, advertising, open houses, job opportunity hotlines, employee referral programs and more? This peer to peer session will focus on what's working, why it is and how to use the best sources to your best advantage.

Harry J. Joe, Esq.
Jenkens & Gilchrist

David Petrie
Product Support Manager
INFORECT Services Corp.

and others...

TRACK 6: Corporate Hiring Issues

What does the hiring future hold with "the virtual" office? What is the most contemporary update on immigration law? What do you need to know about the Americans with Disabilities Act? This track will offer the latest information to keep you current in your daily efforts.

Moderated Session

TRACK 7: Educator/Recruiter Summit

What's the contemporary view of I.S. education, especially as it relates to how recruiters must rely on the the I.S. talent supply that emerges every year from America's campuses? This summit with I.S. educators who will simultaneously be attending the Worldwide Conference on Information Systems Education (WISE) will focus with your discussions on how to maximize your college relations and cooperative education efforts.

Additional events:

The Recruitment Challenge

Case Study Presenter:
John Corrigan
VP & General Manager
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This highly interactive and fun half-day session will allow all educators and recruiters to participate in a real-world, team-building solution of a recruitment case study. Since this special session will occur on the last morning of the conference, aspects of previous sessions will be considered and applied in the case study. You won't want to miss this session, because an individual on the winning team will win a notebook computer compliments of Computerworld!

Susan Hodges
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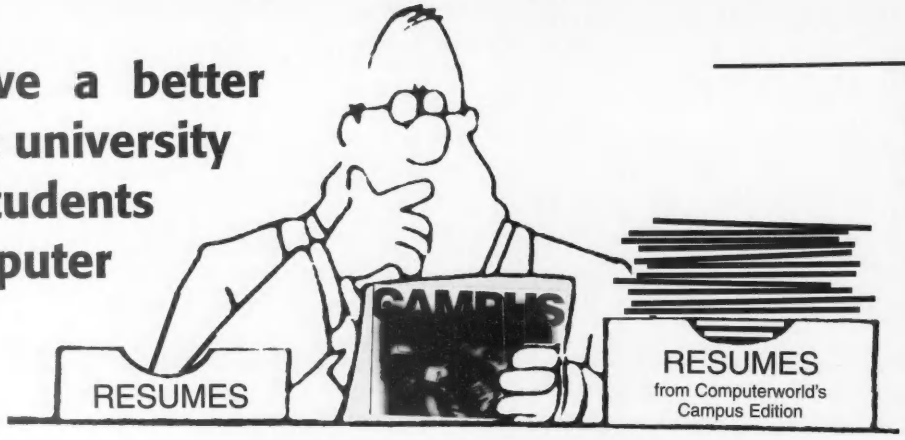

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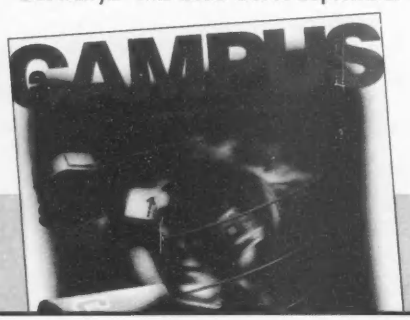

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By Leslie Goff

Despite modest IS budget growth, networking gear accounts for the largest spending increase overall

1 CASE IN POINT

Health care provider targets WAN spending

Ancilla Systems, Inc. in Hobart, Ind., is spending $2 million to implement a T1 wide-area network. It will connect seven hospitals and affiliated facilities across two states and support critical clinical systems such as radiology, pharmacology, laboratory, nursing and admissions as well as legacy back-office applications.

The company spent half the allocated capital last year and will spend the rest this year, says Sydney Tuesley, Ancilla's regional chief information officer. While approximately one quarter of the funds was siphoned from a delayed upgrade of the company's financial systems, three quarters represented a sizable increase in the information systems' capital budget — from $5 million in 1994 to nearly $10 million in 1995.

"We had targeted funds to replace all of our financial systems, but we decided to just keep the existing systems running," Tuesley says. "Health care is changing, and we see managed care coming in and replacing the fee-for-service arrangements. We opted not to invest in replacement systems until we know what the managed-care model will look like. We could end up spending a million dollars or more today, [then] in the next 12 to 18 months find that the systems wouldn't meet our needs."

Top new software implemented in 1994

- Network administration
- Electronic mail
- Application development tools
- Electronic information systems
- Financial reporting
- Office automation
- Electronic data interchange
- Budget planning
- Document management
- Fax software

Source: All chart information is from Business Research Group in Newton, Mass., which surveyed 1,450 IS executives from the service, manufacturing and government sectors

The WAN project received priority because it lays the groundwork for the company to begin migrating to a client/server architecture. The network is operational in all seven hospitals, linking 800 to 1,000 PCs in addition to scores of terminals. Ancilla is porting all new applications to the WAN as they roll out and will begin slowly migrating existing applications this year, Tuesley says.

The biggest expense of the project has been networking gear — routers, concentrators, switches and other assorted hardware needed to put a network together, Tuesley says. Other expenses include PC hardware, software and the physical wiring and implementation costs.

Hot spots

Percentage of respondents expecting to increase spending by 10% or more

PCs	23%
Minicomputers	20%
LAN internetworking	18%
Portables/Laptops	17%
LAN hardware	16%

2 CASE IN POINT

Budget budgets for re-engineering

Budget Rent A Car Corp. in Lisle, Ill., is investing $500 million over a 10-year period to re-engineer core processes and associated systems as part of an initiative to improve customer service and satisfaction.

The IS objective is to make critical enterprisewide applications, such as new customer reservation and rental counter systems tied to multiple databases, available to Budget storefronts in more than 3,700 locations worldwide, says Don Saulic, vice president of information technology.

"These systems will feature single, integrated databases of customers, rates and products and will enhance customer satisfaction," Saulic says. "Whether they're a Paris customer or a Chicago customer, they'll be recognized as a singular customer to Budget. Their information will be shared worldwide."

Budget is in the midst of implementing the first of two major applications that it will roll out this year. Saulic estimates that the customer reservation system will be in place by the fall, at which time he'll turn his attention to the rental counter application.

Budget has spent 20% of its $500 million capital budget; 80% of that went toward application development-related activities, including planning, design, internal development and consulting services, Saulic says. And 20% has been invested in PC hardware and software, network hardware and LAN/WAN networking.

Cool spots

Percentage of respondents expecting to decrease spending by 10% or more

Mainframes	20%
Terminals	19%
Rewriting in-house applications	8%
Application development	6%
Service bureaus	6%

Top technologies implemented in 1994

- Client/server
- CD-ROM
- Relational database management systems
- Graphical user interfaces
- Portables/Laptops
- Unix
- Pentium-based systems
- Distributed processing
- Optical discs
- RISC workstations

At the same time, Budget has maintained spending on mainframe support, although it has slowed development and moved into maintenance. According to Saulic, Budget will continue to support whatever platforms make sense for the business. Many existing and emerging applications will run across mainframes because of the sizes of their associated databases, he says.

"I'm not a believer that everything should be client/server or mainframe," Saulic says. "I think each has its own advantages and benefits, and we're trying to leverage those across all platforms. Our focus is on having a single, integrated worldwide system that supports our business needs."

Spending will shift again this fall when Budget begins working on the rental counter application. With the infrastructure solidly in place, Saulic foresees funneling the extra dollars into application development.

According to a study by Business Research Group in Newton, Mass., 64% of respondents indicated that process re-engineering was "critically important" or "very important" in shaping IS budgets. It also found that companies in the transportation sector are allocating at least a quarter of their annual budgets to implement and maintain client/server applications and technologies. ■

Goff is a freelance writer in New York.

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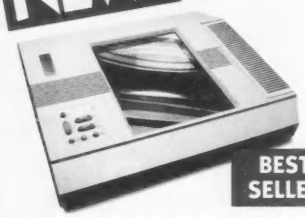

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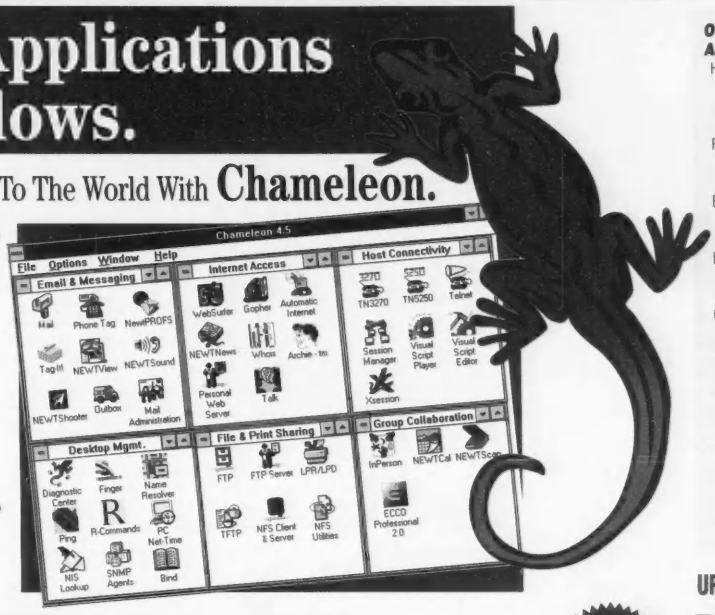

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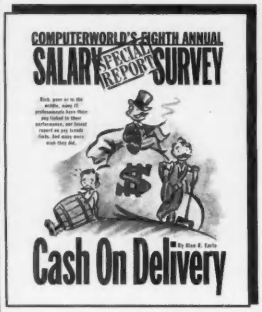

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UPDATE №6

Cadre, IBM, NetLinks, Rational Software win big in Boston.

Everyone who came to Object World Boston in March walked away a winner.
But nobody won bigger than the winners of The 2nd Annual Computerworld's Best New OT Product Awards Competition.

Judge's Choice Awards were presented in three categories. The Best New CORBA-Based Product Award went to NetLinks Technology for ORBitize V1.1, the only multi-ORB, multi-platform development tool on the market. The Best New OT Development Product competition was a dead heat between IBM for VisualAge of C++ Version 3, a powerful new vision of programming, and Rational Software Corporation for Rational Rose Family Version 2.7, the best support for controlled reiterative development. The Best New Component or Library Award was won by Cadre Technologies Inc. for ObjectTeam Application Factory, the first component-based application assembly solution.

And the winners are: (left to right) Mark Roy, President/CEO, NetLinks Technology; Mark Goldberg, Marketing Manager, Rational Software; Mory Bahar, Vice President of Marketing, Cadre Technologies; Tim Negris, Vice President of Application Development Marketing, IBM; and Robert Le Blanc, Manager of Application Development Technology Center, IBM.

IBM also took home the Attendees' Choice for Best New Overall OT Products Award for VisualAge of C++ Version 3, making it a banner day for Big Blue, and clearly signaling OT's shift into the mainstream.

Our congratulations to all the winners. And thanks to everyone who took the time to attend or exhibit at the biggest and best all-OT show ever held on the East Coast. What's next?

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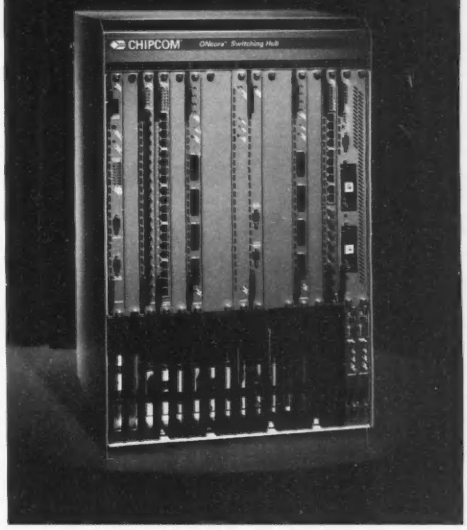

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April 13 Stock Ticker

Gainers

Percent

Easel Corp.(L)	41.9
Struct. Dynamics Research	34.5
Bachman Info. Systems(H)	32.4
Rasterops	28.1
Parametric Technology	25.0
Hyperion Software Corp.	23.7
Quarterdeck Corp.(H)	22.3
Quantum Corp.	18.9

Dollar

Hyperion Software Corp.	9.00
Parametric Technology	9.00
Intel Corp.(H)	7.88
Xilinx	6.75
Adobe Systems Inc.(H)	6.00
LSI Logic Corp.	5.50
Digital Equipment Corp.(H)	5.25
US Robotics	4.50

Losers

Percent

Cray Computer(L)	-28.6
Exabyte	-26.7
Radius Inc.	-18.9
General Datacomm Inds.	-18.6
Xircom(L)	-14.5
Creative Technologies Inc.	-12.2
Sybase Inc.	-11.6
Ross Systems	-11.4

Dollar

Exabyte	-4.38
Stratacom Inc.	-3.75
Sybase Inc.	-3.00
General Datacomm Inds.	-2.63
Radius Inc.	-2.56
FTP Software Inc.	-2.13
Xircom(L)	-1.88
Wall Data Inc.(L)	-1.75

Industry Almanac

Start-ups costing more

For small start-up companies looking for venture capital, the theme today is more, more, more.

The capital these firms require has jumped from $7 million 10 years ago to $12 million today, according to a study of 495 young, venture-backed firms conducted by Coopers & Lybrand.

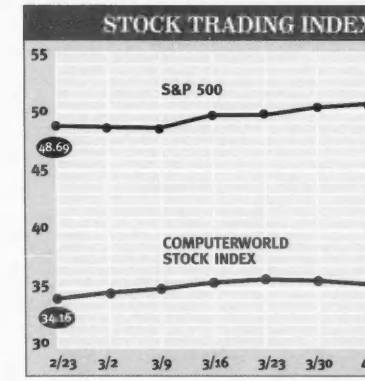
Venture-backed companies create jobs and, because they normally conduct intensive research and development, they strengthen overall U.S. competitiveness, the report said. Computer technology — particularly multimedia — has become one of the most popular targets for venture capital.

"In the mid-'80s, any hard drive maker could get money just thinking up a company," said Larry Buchsbaum, a manager at Coopers & Lybrand. "That was a different time. Now the focus has [moved] to the networking and communications side of computing."

While it takes about four years for a venture-backed company to turn a profit, investors usually wait seven to 10 years before they receive a return on their investment. To achieve this return, venture capital firms can either sell the company or issue an initial public offering (IPO) of common stock.

The IPO market was limited last year, Buchsbaum said, so the acquisition route has been the method of choice. "It depends on the window of opportunity in the IPO market," he said.

The study cited biotechnology, software, communications, semiconductors, electronics and health care as the major recipients of venture capital dollars. Biotechnology's leadership position is waning, however. — *Tim Ouellette*



Exch	52-Week Range			Apr. 13 3pm	Wk Net Change	Wk Pct Change
Communications and Network Services						**UP 1.73%**
OTC	59.75	20.13	3 COM Corp.	57.00	2.88	5.3
NYS	44.50	37.00	AMERITECH Corp. (H)	44.38	1.00	2.3
NYS	57.13	47.25	AT&T	51.25	-0.38	-0.7
OTC	19.75	12.75	Banyan Systems Inc.	15.88	0.00	0.0
OTC	39.50	18.63	Bay Networks Inc.	38.38	1.13	3.0
NYS	58.38	48.38	Bell Atlantic Corp.	54.63	0.63	1.2
NYS	63.50	50.50	Bellsouth Corp.	61.63	1.00	1.6
NYS	22.25	10.00	Bolt, Beranek & Newman	19.38	0.50	2.6
OTC	19.75	9.00	Broadcrout Technology	16.50	-0.75	-4.3
NYS	52.88	33.06	Cabletron Systems	48.00	4.00	9.1
OTC	35.75	10.00	Centigram Communications	15.38	1.00	7.0
OTC	50.50	21.00	Chipcom Corp.	32.75	-0.38	-1.1
OTC	40.00	18.75	Cisco Systems Inc.	40.00	1.13	2.9
OTC	13.63	6.13	Compression Labs Inc.	11.25	0.63	5.9
OTC	9.38	5.13	Computer Network Tech.	8.88	0.88	10.9
OTC	14.50	7.50	CrossComm	10.25	-0.25	-2.4
OTC	4.13	2.00	Data Switch Corp.	3.19	0.19	6.3
OTC	39.00	17.88	DSC Communications	36.13	3.00	9.1
OTC	41.75	10.00	FORE Systems Inc.	33.25	-0.50	-1.5
NYS	35.88	10.00	General Datacomm Inds.	11.50	-2.63	-18.6
NYS	34.88	29.50	GTE Corp.	34.63	0.50	1.5
NYS	104.38	77.00	ITT Corp.	101.00	-0.63	-0.6
OTC	25.88	17.25	MCI Communications Corp.	22.00	0.94	4.5
OTC	15.75	5.88	Micom Communications Corp.	7.38	-0.13	-1.7
OTC	12.63	4.50	Microcom Inc.	11.31	0.19	1.7
OTC	11.50	4.00	Netrix Corp.	7.25	0.00	0.0
OTC	7.38	3.25	Network Computing Devices	7.13	0.25	3.6
NYS	27.88	7.38	Network Equipment Tech.	23.25	0.50	2.2
OTC	30.63	13.88	Network General	27.44	0.69	2.6
NYS	57.63	26.50	Newbridge Networks Corp.	31.50	1.38	4.6
NYS	40.00	26.00	Northern Telecom Ltd.	40.00	1.88	4.9
OTC	21.50	13.38	Novell Inc.	21.13	2.50	13.4
NYS	41.50	33.88	Nynex Corp.	40.50	0.38	0.9
OTC	24.25	15.50	Octel Communications Corp.	19.56	-0.31	-1.6
OTC	38.50	12.00	Optical Data Systems Inc.	37.75	2.25	6.3
OTC	6.00	2.13	Penril Data Comm Networks	4.00	0.00	0.0
OTC	39.25	10.00	Picturetel Corp.	39.25	3.00	8.3
OTC	8.13	2.13	Proteon Inc.	5.88	0.13	2.2
OTC	10.00	2.75	Racotek Inc.	5.69	-0.31	-5.2
OTC	8.25	3.50	Retix	4.50	0.13	2.9
NYS	24.88	12.75	Scientific Atlanta Inc.	23.63	0.88	3.8
NYS	44.38	38.50	Southwestern Bell Corp.	43.25	0.38	0.9
NYS	40.13	25.88	Sprint Corp.	32.13	0.38	1.2
OTC	31.63	13.38	Standard Microsystems Corp.	16.50	-0.13	-0.8
OTC	47.00	9.75	Stratacom Inc.	38.50	-3.75	-8.9
OTC	12.88	3.88	Telebit Corp.	6.69	0.19	2.9
OTC	72.00	24.00	US Robotics	69.75	4.50	6.9
NYS	43.75	34.63	U S West Inc.	42.13	1.25	3.1
OTC	23.50	11.06	Xircom (L)	11.06	-1.88	-14.5
OTC	28.00	8.00	Xylogics Inc.	18.00	0.50	2.9
PCs and Workstations						**UP 3.83%**
OTC	6.50	3.50	Advanced Logic Research	5.00	0.25	5.3
OTC	48.06	24.63	Apple Computer Inc.	38.25	1.38	3.7
OTC	20.00	10.38	AST Research Inc.	17.38	1.00	6.1
NYS	44.38	29.50	Compaq Computer Corp.	33.00	1.25	3.9
OTC	47.75	21.25	Dell Computer Corp.	45.75	2.11	4.8
OTC	25.25	9.25	Gateway 2000 Inc.	18.50	1.50	8.8
NYS	125.00	71.88	Hewlett Packard Co.	123.50	4.00	3.3
NYS	38.00	18.75	Silicon Graphics	35.63	1.13	3.3
OTC	37.63	18.25	Sun Microsystems Inc.	35.75	1.31	3.8
NYS	52.38	31.00	Tandy Corp.	49.25	0.38	0.8
OTC	11.75	11.25	Zeos International Ltd.	11.25	-0.13	-1.1
Large Systems						**UP 0.88%**
ASE	12.63	5.25	Amdahl Corp. (H)	12.63	0.50	4.1
NYS	8.88	4.38	Convex Computer	4.88	0.00	0.0
OTC	0.22	0.16	Cray Computer (L)	0.16	-0.06	-28.6
NYS	26.50	14.63	Cray Research Inc.	19.38	0.50	2.6
NYS	12.00	6.63	Data General Corp.	8.50	1.13	15.3
NYS	45.13	18.25	Digital Equipment Corp. (H)	45.13	5.25	13.2
OTC	5.63	1.72	Encore Computer Corp.	2.63	0.03	1.1
OTC	18.50	6.50	Harris Computer Systems Cor	15.00	0.00	0.0
NYS	86.88	51.38	IBM (H)	86.38	1.50	1.8
OTC	14.50	5.00	NetFrame	6.00	0.06	1.1
OTC	7.88	3.63	Parallan Computer	6.38	0.50	8.5
OTC	21.25	11.13	Sequent Computer Sys.	16.75	0.50	3.1
OTC	5.88	3.13	Sequoia Systems Inc.	3.88	0.06	1.6
NYS	39.88	22.88	Stratus Computer Inc.	26.38	-1.00	-3.7
NYS	19.75	10.50	Tandem Computers Inc.	13.38	-1.25	-8.5
OTC	15.50	3.88	TriCord Systems	4.75	0.00	0.0
NYS	14.25	8.25	Unisys Corp.	10.25	0.63	6.5
Software						**UP 4.79%**
OTC	53.75	23.50	Adobe Systems Inc. (H)	53.50	6.00	12.6
OTC	5.88	2.50	American Software Inc.	4.00	0.13	3.2
OTC	44.00	23.25	Autodesk Inc.	40.75	-0.25	-0.6
OTC	6.13	1.75	Bachman Info. Systems (H)	6.13	1.50	32.4
OTC	30.25	20.75	BGS Systems Inc.	28.25	0.00	0.0
OTC	69.75	40.25	BMC Software Inc.	62.50	2.50	4.2
OTC	30.50	15.31	Boole & Babbage	28.88	0.13	0.4
OTC	14.38	6.00	Borland Int'l Inc.	8.25	0.38	4.8
OTC	22.25	5.75	Brock Control Systems Inc.	7.00	0.13	1.8
OTC	3.75	1.78	CE Software	3.00	-0.25	-7.7
ASE	27.00	6.25	Cheyenne Software Inc.	15.88	0.50	3.3
OTC	24.13	9.75	Cognos Inc. (H)	21.13	0.38	1.8
NYS	64.38	27.38	Computer Associates	60.00	1.25	2.1
NYS	6.50	2.50	Computervision Corp. (H)	6.13	0.50	8.9
OTC	49.25	26.75	Compuware Corp. (L)	27.75	-1.25	-4.3
OTC	17.50	9.00	Comshare Inc.	17.50	1.88	12.0
OTC	16.75	10.13	Corel Corp.	13.75	0.38	2.8
OTC	16.25	7.25	Dataware Technologies Inc.	15.25	0.25	1.7
OTC	5.13	1.88	Easel Corp. (L)	2.75	0.81	41.9
OTC	36.25	14.25	Filenet Corp.	34.56	2.06	6.3
OTC	8.75	3.00	4th Dimension	4.75	-0.13	-2.6
OTC	22.25	8.50	Frame Technology	20.88	2.63	14.4
OTC	35.50	11.50	FTP Software Inc.	26.38	-2.13	-7.5
OTC	10.25	7.00	Group I Software	9.50	0.00	0.0
OTC	27.00	6.75	Gupta	10.13	-0.63	-5.8
OTC	10.75	4.63	Hogan Systems Inc.	6.00	0.00	0.0
OTC	49.75	18.00	Hyperion Software Corp.	47.00	9.00	23.7
OTC	17.75	11.25	Information Resources	13.88	1.63	13.3
OTC	39.75	14.25	Informix Corp.	37.50	2.88	8.3
OTC	14.38	7.38	Intergraph Corp.	13.00	0.88	7.2
OTC	7.25	2.50	Interleaf Inc.	5.63	0.63	12.5
OTC	18.25	8.63	Intersolv Inc.	15.13	0.25	1.7
OTC	79.00	27.00	Intuit Inc.	73.75	1.00	1.4
OTC	37.25	19.00	Legent Corp.	28.13	-0.38	-1.3
OTC	66.50	29.75	Lotus Development	33.63	-0.50	-1.5
OTC	13.25	4.13	Magic Software Enterprises (L)	4.63	-0.13	-2.6
OTC	14.50	6.00	Manugistics Group Inc.	11.75	-0.25	-2.1
OTC	31.75	14.75	MapInfo Corp.	30.13	0.63	2.1
OTC	4.75	1.44	MathSoft	2.88	-0.13	-4.2
OTC	31.00	6.50	McAfee Associates	28.25	0.14	0.5
OTC	16.38	9.38	Mentor Graphics	16.25	0.75	4.8
OTC	20.00	11.00	Micro Focus	11.25	-0.13	-1.1
OTC	8.00	4.63	Micrografx Inc.	6.13	0.13	2.1
OTC	74.13	41.13	Microsoft Corp.	72.50	2.38	3.4
OTC	22.50	5.63	NetManage Inc.	17.75	0.00	0.0
OTC	34.63	17.50	Oracle Corp.	32.00	2.00	6.7
OTC	45.00	21.50	Parametric Technology	45.00	9.00	25.0
OTC	24.25	9.00	ParcPlace Systems Inc.	12.25	0.13	1.0
OTC	48.75	13.00	Peoplesoft	43.00	1.75	4.2
OTC	8.50	4.38	Phoenix Technologies	7.25	0.13	1.8
OTC	14.75	5.50	Platinum Software	8.94	0.31	3.6
OTC	25.25	12.00	Platinum Technology	16.69	0.69	4.3
OTC	59.50	27.00	Progress Software Corp.	47.25	-1.25	-2.6
OTC	5.06	1.88	Quarterdeck Corp. (H)	4.97	0.91	22.3
OTC	18.75	9.50	Rainbow Technologies Inc.	17.13	0.63	3.8
OTC	6.13	2.00	Rasterops	5.13	1.13	28.1
OTC	6.13	2.88	Ross Systems	4.88	-0.63	-11.4
OTC	12.00	0.50	Sapiens Intl. Corp. N.V.	3.88	0.19	5.1
OTC	29.13	10.00	Softkey International Inc.	27.38	1.88	7.4
OTC	6.25	3.25	Software Publishing Corp.	3.75	0.25	7.1
OTC	12.25	5.00	State of the Art	10.88	-0.38	-3.3
NYS	38.38	25.00	Sterling Software Inc.	33.88	-0.38	-1.1
OTC	13.63	3.63	Struct. Dynamics Research	12.19	3.13	34.5
OTC	57.00	22.00	Sybase Inc.	22.88	3.00	11.6
OTC	24.50	8.88	Symantec Corp.	22.00	1.50	7.3
OTC	54.75	33.00	SynOpsys	51.00	3.25	6.8
OTC	28.88	10.63	System Software Assoc.	25.88	2.13	8.9
OTC	7.75	3.25	Trinzic Corp.	6.00	0.38	6.7
OTC	28.00	7.88	ViewLogic Systems	8.88	0.00	0.0
OTC	23.25	10.75	VMark Software Inc. (L)	12.25	0.25	2.1
OTC	10.75	5.50	Walker Interactive Systems	7.00	0.13	1.8
OTC	55.50	19.75	Wall Data Inc. (L)	20.75	-1.75	-7.8
Semiconductors						**UP 6.83%**
NYS	36.88	22.25	Advanced Micro Devices (H)	34.88	-1.63	-4.5
NYS	28.13	16.34	Analog Devices Inc.	26.38	0.88	3.4
OTC	42.88	20.38	Atmel Corp. (H)	42.75	3.88	10.0
OTC	8.88	3.63	Chips and Technologies	8.38	0.38	4.7
OTC	39.13	21.00	Cirrus Logic	39.13	4.00	11.4
NYS	32.25	13.88	Cypress Semiconductor Corp.	30.50	1.75	6.1
NYS	20.13	13.38	Dallas Semiconductor	18.00	0.75	4.3
OTC	31.75	14.75	Integrated Silicon Systems	28.25	0.25	0.9
OTC	95.00	56.00	Intel Corp. (H)	95.00	7.88	9.0
NYS	58.88	16.75	LSI Logic Corp.	58.88	5.50	10.3
OTC	27.13	14.75	Lattice Semiconductor	26.13	2.38	10.0
NYS	85.13	28.25	Micron Technology	80.00	3.25	4.2
NYS	64.75	42.13	Motorola Inc.	54.88	-0.13	-0.2
NYS	21.50	14.38	National Semiconductor	19.75	1.00	5.5
OTC	29.25	6.75	Sierra Semiconductor	26.00	2.38	10.1
NYS	98.00	63.25	Texas Instruments	94.75	4.00	4.4
OTC	19.63	10.25	VLSI Technology (H)	19.63	1.50	8.3
OTC	6.88	1.78	Weitek	3.88	0.25	6.9
ASE	19.38	11.50	Western Digital Corp.	15.50	2.13	15.9
OTC	72.25	29.00	Xilinx	70.50	6.75	10.6
OTC	38.50	24.75	Zilog Inc.	38.25	2.75	7.7
Peripherals and Subsystems						**UP 2.46%**
OTC	24.50	14.50	American Power Conversion	16.00	0.25	1.6
OTC	27.25	14.75	Banctec Inc.	15.75	0.00	0.0
OTC	5.75	3.25	Cambex Corp.	5.50	0.75	15.8
ASE	3.75	1.38	Cognitronics Corp.	2.88	0.19	7.0
NYS	16.13	9.00	Conner Peripherals	10.00	0.38	3.9
OTC	24.00	9.75	Creative Technologies Inc.	10.75	-1.50	-12.2
OTC	10.00	3.50	Data Race Inc.	10.00	0.50	5.3
ASE	7.63	4.13	Dataram Corp.	5.13	0.13	2.5
NYS	24.00	12.38	EMC Corp.	19.13	2.13	12.5
OTC	20.13	3.50	Emulex Corp.	18.38	1.13	6.5
OTC	18.00	11.25	Evans & Sutherland	15.38	0.25	1.7
OTC	24.00	12.00	Exabyte	12.00	-4.38	-26.7
OTC	8.63	1.88	Intelligent Info. Systems	2.63	-0.25	-8.7
OTC	11.25	1.59	Iomega Corp. (H)	10.38	0.44	4.4
OTC	7.50	2.00	IPL Systems Inc.	4.19	0.00	0.0
OTC	35.50	17.00	Komag Inc. (H)	35.00	3.19	10.0
OTC	7.38	2.63	Maxtor Corp.	4.56	0.44	10.6
OTC	11.50	4.00	Micropolis Corp.	5.13	0.25	5.1
OTC	17.75	9.25	Pinnacle Micro Inc.	12.75	0.13	1.0
OTC	28.75	5.16	Printronix Inc.	19.25	-0.63	-3.1
NYS	10.75	5.25	QMS Inc.	6.00	0.38	6.7
OTC	19.38	11.63	Quantum Corp.	18.50	2.94	18.9
OTC	15.50	7.38	Radius Inc.	11.00	-2.56	-18.9
NYS	13.88	6.38	Recognition International	6.75	0.13	1.9
OTC	7.00	4.13	Rexon Inc.	5.13	0.75	17.1
OTC	29.13	18.63	Seagate Technology (H)	29.13	1.00	3.6
NYS	39.13	17.88	Storage Technology	18.88	0.63	3.4
NYS	44.88	27.38	Tektronix Inc. (H)	44.88	2.00	4.7
NYS	120.50	90.63	Xerox Corp.	115.25	-0.50	-0.4
Services						**UP 2.08%**
OTC	21.88	13.16	American Mgmt. Systems	20.75	-0.25	-1.2
NYS	4.25	1.50	Anacomp Inc. (L)	1.50	-0.13	-7.7
OTC	24.75	14.50	Analysts Int'l (H)	24.75	1.13	4.8
NYS	65.50	47.63	Auto Data Processing	65.38	2.75	4.4
OTC	36.25	14.00	Cambridge Tech. Partners	31.00	1.00	3.3
NYS	34.50	22.13	Ceridian Corp.	33.75	1.13	3.4
NYS	27.88	17.75	Comdisco Inc. (H)	27.25	0.75	2.8
NYS	19.00	8.25	Computer Horizons	17.50	0.50	2.9
NYS	52.63	35.75	Computer Sciences	49.13	1.13	2.3
NYS	12.13	7.50	Computer Task Group	11.38	-0.38	-3.2
NYS	21.88	6.75	CompUSA Inc.	21.00	2.38	12.8
OTC	11.38	5.38	Control Data Systems Inc.	7.75	0.75	10.7
OTC	12.13	6.13	Egghead Discount Software	9.13	0.00	0.0
NYS	41.38	32.88	General Motors E (EDS)	40.00	1.38	3.6
OTC	14.25	6.88	Inacom Corp.	8.25	-0.50	-5.7
OTC	23.25	7.50	Intelligent Electronics	10.19	0.19	1.9
OTC	18.38	3.88	Merisel	5.63	-0.13	-2.2
OTC	28.75	8.50	Microage Inc.	9.38	-0.06	-0.7
OTC	48.75	28.50	Paychex	45.56	-1.69	-3.6
NYS	51.13	25.75	Policy Management Sys. (H)	51.13	4.00	8.5
NYS	28.63	19.75	Reynolds and Reynolds	28.13	0.88	3.2
OTC	24.25	16.75	SEI Corp.	18.25	0.50	2.8
OTC	37.88	22.13	Shared Medical Systems	34.75	-0.38	-1.1
OTC	8.00	4.06	SHL Systemhouse	6.50	0.56	9.5
OTC	21.50	9.25	Software Spectrum Inc.	17.00	-0.25	-1.4
OTC	48.75	31.50	Sungard Data Systems	46.75	1.75	3.9

KEY: (H) = New annual high reached in period (L) = New annual low reached in period

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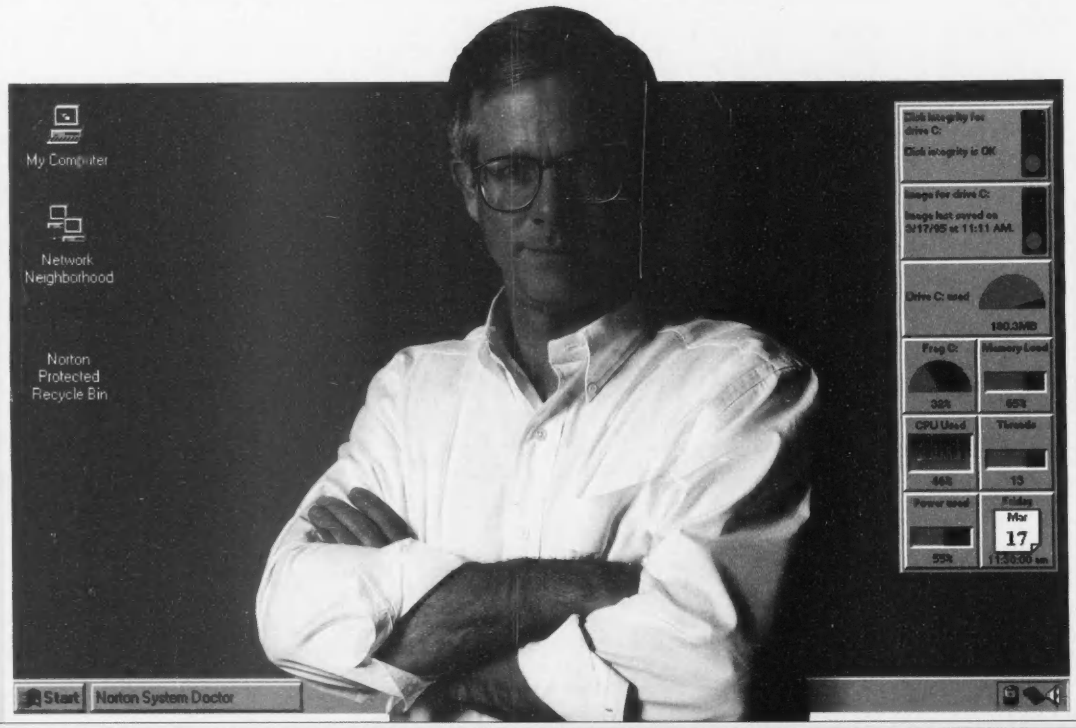

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Mobile market

CONTINUED FROM PAGE 1

tegrate features of Microsoft Corp.'s BackOffice applications suite into RemoteWare, sources said. This would give corporations end-to-end management capabilities for both enterprise data and remote users.

● Xcellenet and Racotek, Inc. are discussing a strategic partnership that would combine Xcellenet's highly regarded wired capabilities with the various wir 'ess services, enhancing a corporation's ability to support wireless networks, according to sources.

● Xircom, Inc. has bought Primary Rate, a privately held Integrated Services Digital Network player, and it announced new modems. This signals renewed competition in the communications market and increased levels of hardware and software integration.

Room for improvement

Users said they are eager for developments that will make it easier to compute from the field.

"We would have more people mobile if it was easier to do," said John Geyer, chief information officer at Financial Guaranty Insurance Co. in New York. Geyer said his workers were ecstatic when the company installed Lotus Development Corp.'s CC:Mail Mobile, but that "on a scale of 1 to 10, we went from a 1 to a 3. There is plenty of room for improvement."

Geyer specifically noted that links between the mobile user and the corporate office need to be faster and more stable, especially for accessing corporate applications besides electronic mail.

The Microsoft/Xcellenet connection in particular is being viewed with a great deal of anticipation.

"It solves a lot of problems if they can integrate the office with the remote workforce," said one source, who asked not to be named.

Andrew Seybold, editor of "The Outlook on Communications and Computing," a Brookdale, Calif., newsletter, said, "We're getting more and more to the point where mobile users get to do real stuff."

But he cautioned that wireless computing, a key component of the future of mobile computing, is not as far along as other parts of the industry.

But even wireless, the mobile millstone, is seeing encouraging activity:

● McCaw Cellular Communications, Inc. today will announce commercial service and pricing for its Cellular Digital Packet Data (CDPD) network, giving a significant boost to that network's viability. McCaw said it would have CDPD running over 75% of its voice network by the end of the year.

● Motorola, Inc. is readying a Type II PCMCIA CDPD modem that will be out in the third quarter. This signals that competition — and lower pricing — is coming to the wireless peripherals market.

● Informix Corp. has scheduled a meeting with Racotek to talk about Racotek's wireless integration capabilities, sources said. Racotek may give Informix a way to catch up with rivals Oracle Corp. and Sybase, Inc.

Perhaps of greater significance to corporations interested in wireless is that the first actual user of multiple wireless infrastructures has gone live. Paragon Cable, a Minneapolis cable provider in the process of being sold to Time Warner, Inc., has some 90 users running both a Specialized Mobile Radio network and the Mobitex network from RAM Mobile Data USA L.P. over Racotek's KeyWare.

Paragon's application is interesting because most observers expect that the limited coverage provided by all the wireless data networks is going to force many users to run multiple networks.

All this activity suggests that the mobile market, and the wireless market in particular, may be heading from the bleeding edge to the leading edge. Some vendors report a change in their customers' requests.

"The users we talk to are shifting from the education stage to the pilot stage," said Michel Mayer, product manager of mobile products at IBM's Networking Hardware Division.

But mobile users should not expect to see the market hit warp speed much before year's end, at the earliest.

A start-up targets wireless reliability. See page 65.

AMD delays Pentium rival

By Jaikumar Vijayan

Users waiting for alternatives to Intel Corp.'s Pentium chip will have to wait a bit longer. Last week, Intel's main rival, Advanced Micro Devices, Inc., announced that its much-touted K5 Pentium-class processor will be delayed two to four months.

Originally scheduled to ship in volume by the third quarter, systems based on the K5 now appear unlikely to ship until well into the first quarter of 1996.

Sunnyvale, Calif.-based AMD last week insisted that the delay was caused by more extensive quality testing but was "no showstopper." A spokesman also maintained that AMD's plans to ship an estimated 5 million K5 chips in 1996 remain unaffected.

But analysts said the real reason behind the delay is that AMD is waiting for its next-generation 0.35-micron process manufacturing technology to be fully operational; that is expected in the first quarter of next year. AMD's current 0.5-micron technology process is used for manufacturing its highly successful 486 clone chips, of which the company hopes to sell at least 10 million this year.

"It was a purely business decision on AMD's part," said Dean McCarron, an analyst at Mercury Research, Inc. in Scottsdale, Ariz. "For every K5 that they manufactured [on the 0.5-micron process], they would have sacrificed dozens if not hundreds of 486 chips."

AMD conceded last week that its decision to postpone delivery of the K5 will have an "upside for 486 production."

Sybase

CONTINUED FROM PAGE 1

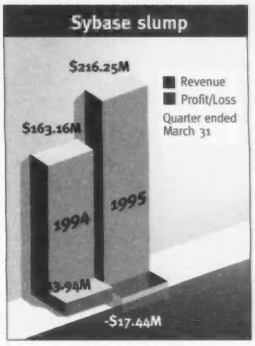
In addition, problems porting hot-selling client/server applications from PeopleSoft, Inc. and SAP AG to System 10 also ate into Sybase sales, the CEO said. After roughly a year's work by the two vendors, PeopleSoft's accounting packages are due to ship on System 10 this year.

Delays, delays

However, Sybase ports of SAP applications have been pushed off until next year, Hoffman said. SAP must wait for Sybase to support row-level locking in its database, and that is not expected until System 11, the follow-on database to System 10.

System 11 is scheduled for beta testing this quarter, with general availability slated for the third quarter, Hoffman noted.

"Sybase is a database administrator's nightmare," said a person who holds that job at Burroughs Wellcome Co., a manufacturer in Durham, N.C. System 10's complex engine means that a lot of extra effort goes into installing and maintaining the database, he said.



Another user, Teleport Communications Group, is waiting for System 11 before trying any major applications on a large number of processors, said Patrick Socci, vice president of information services at the New York phone company. Socci plans to put key applications, such as billing, on six six-processor servers from Sun Microsystems, Inc.

Overall, System 10 performs well on multiprocessing hardware of up to four or six CPUs, but it buckles as more processors are added, Hoffman conceded.

In general, performance of the database does not rise steadily as users add CPUs to the hardware hosting System 10, which is what users expect, said Richard Winter, president of Winter Corp., a Cambridge, Mass.-based consulting firm that specializes in large database issues.

Instead, performance can slow dramatically, making untenable very large database configurations of 100G bytes or more on symmetrical multiprocessing machines with more than four processors, he said.

The way in which the System 10 kernel handles some technical database issues has prevented its performance from becoming "top notch" in multi-CPU configurations, said George Anderson, president of Enterprise Engineering, Inc., a database contracting firm in New York.

Part of System 11 includes a project, codenamed Cougar, that involves Sybase's rewriting part of the database kernel to give each engine its own run queue. Cougar includes other kernel tweaks for solving some of the troubles that drag down current performance.

"System 11 solves almost all the issues," Hoffman said.

Sybase's seemingly slow reaction to complaints about its core product have caught up with the company, some observers said. "The time between major enhancements of their database is the longest of any of the major players," said John Jones, an analyst at Salomon Brothers, Inc., a brokerage in San Francisco.

Still, System 10 is no dog, said Sadie Decker, senior vice president of advanced information technology at Tele-Communications, Inc. in Englewood, Colo.

The company, which services 12 million cable, satellite and telephone subscribers, runs System 10 on an eight-processor Hewlett-Packard Co. T500 server with "outstanding" performance, Decker said.

She declined to cite numbers but said she is "more than pleased" with the database's throughput and query processing times. Decker attributed much of her success to expert in-house database administrators.

Sybase's days of eye-popping quarterly growth rates of 65% or more seem to be over, analysts said. "The larger they get, the tougher it will be" to maintain such a fast pace of sales and profits, Jones said.

Hoffman said he is depending on System 11 to bring total 1995 sales over the $1 billion mark.

Database users need help sorting through connectivity choices. See page 81.

Intel's P6 looks like a cache cow

Intel is now designing each generation of chips with one eye fixed on the server market. Its upcoming P6, with 256K bytes of high-speed cache embedded in the same ceramic package as the CPU, is going to get a warm reception among server manufacturers.

At the low end, PC managers and IS managers can expect low-cost, symmetrical multiprocessing (SMP) servers with up to four processors. These SMP packages will be inexpensive because Intel is supplying the cache coherency needed to coordinate the 256K-byte secondary caches aligned with each processor. In effect, Intel will supply symmetrical processing capabilities at the board level, and SMP will become a commodity item up to the four-processor limit.

What is more intriguing is how high-end server makers will incorporate this new chip.

The Mata View

In effect, Intel will supply symmetrical processing capabilities at the board level.

Charles Babcock

Lew Paceley, Intel's product marketing manager for the P6, acknowledged that low-end servers will be the first to benefit from the new design. The second-level cache is a storehouse for instructions and data required by the CPU, which are prefetched from memory. The second-level cache can dispense them to the on-board caches of the CPU more quickly than traditional secondary caches, which must be located outside the microprocessor substrate.

Also, the P6's second-level cache is static RAM, so it is faster than secondary caches made of up dynamic RAM. Static RAM uses multiple transistors per bit and a constant low-level electric charge, so it does not need to be refreshed the way DRAM does. In effect, Intel has designed a 15.5-million transistor static memory chip and embedded it alongside the CPU.

There are several supporting features in the P6 that appear to maximize the value of this second-level cache. Intel designers sought to minimize collisions among data being loaded into cache by using a four-way set associative approach, meaning data can be mapped from main memory into any of four locations in the cache instead of only one.

Paceley claims the value of these innovations adds up to a 256K-byte cache that is capable of functioning as effectively as a 512K-byte cache. He says Intel designed a bus for this Level 2 cache that operates at the same speed as the microprocessor. A 133-MHz P6 CPU will have a 133-MHz bus. In today's Pentium, a 120-MHz CPU has a 60-MHz bus, he says.

But do the designers at Sequent, whose Symmetry 5000 servers are based on the Pentium, believe a 256K-byte cache is as good as a 512K-byte cache? Until now, Sequent has designed its own Level 2 cache into its servers, supplying 2M bytes in a typical configuration, according to Bob Robinson, product marketing manager for Symmetry servers.

What will Sequent do when the P6 becomes available? Use the in-module 256K-byte cache or bypass it as too small and superimpose its own caching system?

Robinson declines to answer specifically. Like any large server manufacturer, Sequent is trying to create a balanced system to maximize throughput. Whatever it does, Sequent "will take a commodity product and build larger systems out of it," Robinson says. So I expect future Sequent systems to be built out of four-unit, P6 SMP boards. These units will have a combined 1,024K bytes of cache, or the equivalent of 2,048K bytes of cache, if you share Intel's confidence in its design.

I think Intel designed the P6 Level 2 cache for the type of server that Sequent wants to build, and Sequent will rely on the P6's internal cache and the four-way P6's internal cache coherence in its next generation servers. It will treat four-processor P6 boards as single units in a new line of multiprocessor servers, boosting the total processing power above the 14 to 16 CPUs that is typical today.

And for a similar price, customers will get a commensurate leap in server power that reflects Pentium improvement times four.

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Inside Lines

Navigating to NetServer land

Sources tell us that Hewlett-Packard is pumping up its NetServer line of PC servers with a new dual-processor system based on Intel's 100-MHz Pentium chip. HP's new Peripheral Component Interconnect/EISA offering will reportedly come standard with a new CD-ROM called HP NetServer Navigator, which is aimed at easing installation, configuration and management of networked PCs. The new NetServer line will be announced at Comdex/Spring '95 in Atlanta next week and will be priced from $4,600 to $9,500 for dual-processor systems. HP is also expected to announce a top-of-the-line, quad-processor Pentium-based system featuring 32-bit PCI late in the second quarter.

Taking Junior to the show

IBM plans to use next month's DB/Expo show in San Francisco to unveil long-awaited upgrades to its junior DB2 databases for OS/2 and AIX, according to a source close to the company. IBM loyalists, who have been waiting for Version 2 of DB2/2 and DB2/6000 for about a year, are looking for features such as stored procedures, which would put the products on par with databases from Oracle, Sybase and others. Users also want better compatibility between the database siblings and IBM's mainframe DB2 mother ship.

The power of user persuasion

Some unhappy feedback from AS/400 users has prompted IBM to change its development tune for the machine's OS/400 operating system. A release being written for upcoming PowerPC-based models was all set to get new features not included in the just-shipped Version 3 for non-RISC AS/400s. But after customers complained about how this lack of uniformity would complicate their lives, IBM sped up a Version 3 upgrade so that both pieces of software will get the added functions at the same time.

Stepping lightly

Oracle is racing SAP AG and other client/server rivals to market with "lite" versions of financial and manufacturing applications designed to run on Windows 95, Windows NT and other non-Unix platforms, according to Ray Lane, president of worldwide operations at Oracle. The scaled-down packages, expected to ship late this year, will include features that cut install time to between 90 and 120 days.

IBM PCs popping up all over

The IBM PC Co. is set to announce extensions to its IBM 300 series and IBM 700 series of desktop PCs, according to sources close to the company. The announcements, scheduled for the week of May 9, will include Pentium additions to IBM's largely 486-based entry-level 300 series, as well as extensions in memory, disk-drive sizes and multimedia capabilities. IBM also plans to announce a 120-MHz Pentium system to its 700 series of products. Prices are expected to range from about $1,150 to $4,300.

The trouble with PCMCIA cards

Besides having a user-unfriendly name, those little PCMCIA cards can prove pesky when it comes to actually getting them to work. SystemSoft, whose CardSoft BIOS is used by 60% of notebook manufacturers, will release today what it hopes will give IS managers a sense of control over their wayward devices. The CardWizard Pro is the first PCMCIA card management software to be offered directly to users, rather than strictly to hardware makers.

Without Vanna White's ever lifting a finger, Global Village Communication, Inc. in Sunnyvale, Calif., has added the letter "e" to its Internet domain name, which previously was globalvillag.com. But it took a team of lawyers negotiating with an independent Internet user to purchase rights to globalvillage.com. As the press release amusingly noted, "Although th cost of th transaction was not announced publicly, it is blivd that Global Villag was forcd to trad comparabl vowls in ordr to clos th dal." And if you're in the mood to trade vowels with us about news items or tips, please call our 24-hour voice-mail tip line at (508) 820-8555 or our toll-free number at (800) 343-6474. News editor Maryfran Johnson can be reached by phone at (508) 820-8179 or via the Internet at mjohnson@cw.com.

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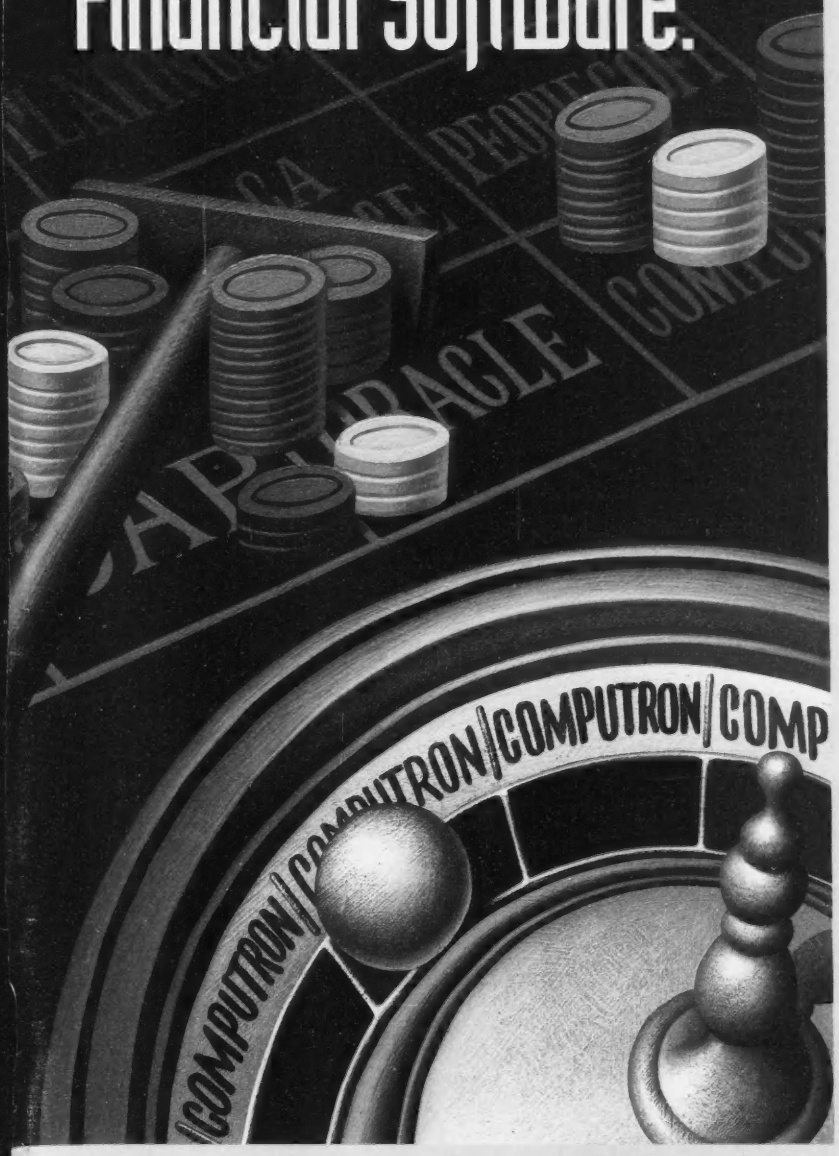

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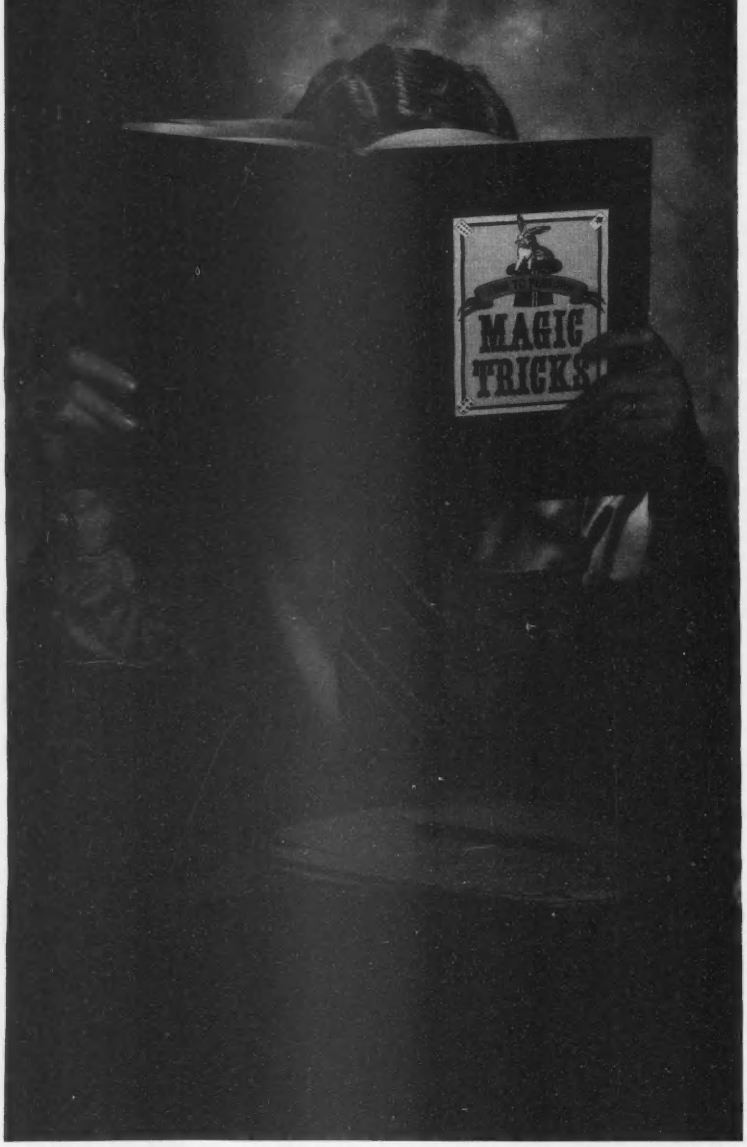

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